THE QUÉBEC ECONOMY

1988

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FOREWORD

The Quebec economy 1988, an analysis of economic trends, was produced by the Montreal Office of the federal Department of Industry, Science and Technology.

The study depicts recent trends in Quebec's economy and industrial base, against a national and international background. An overview of the economy in each region of the province is also provided, with particular attention to their main communities. **The Quebec economy 1988** also offers readers structural analyses on the following topics: industrial research and development in Quebec; the dissemination of technology in Quebec; and the pulp and paper industry.

The Quebec economy 1988 was prepared under the responsibility of Jean-Pierre Lussier and Léonel Plasse, respectively economist, and chief, of the Statistical analysis section. Other members of the team were Philippe Aubé, Diane Bellon, Jules Léger, Claude Lussier and Claude Valiquette. Overall responsibility for tables, graphs and statistical data was entrusted to Doris Larose and Chantal Nault. Word processing was provided by Nicole Monchamp, Dyane Provost and Monique Vigneau. The entire team was directed by Daniel Chicoine, Director of the Planning, Analysis and Evaluation Branch. The Department welcomes readers' comments.

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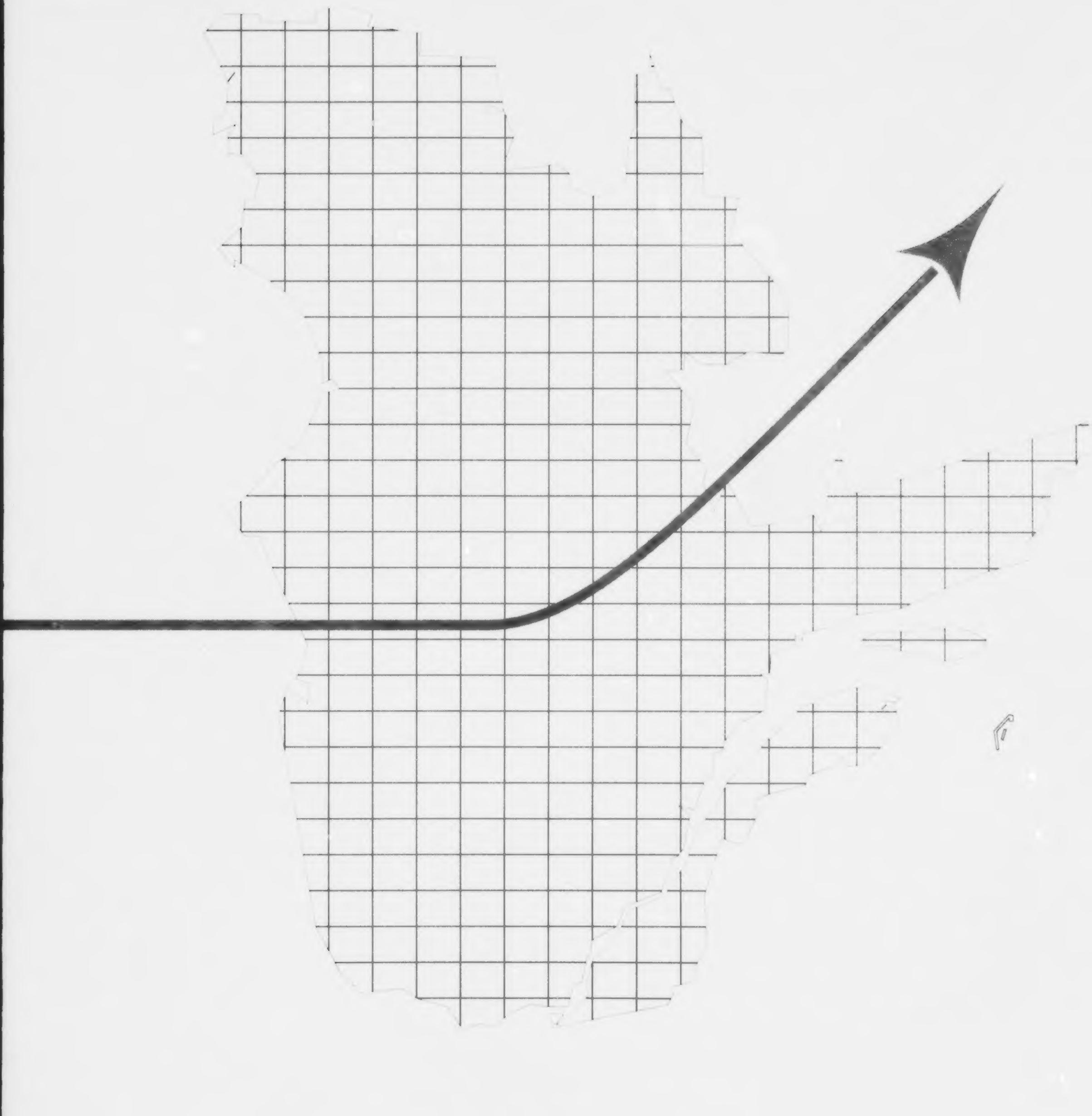
PART I:
Analysis of 1988 economic situation



HIGHLIGHTS

International economic situation

- Despite the stock market crisis in October 1987 and the gloomy forecasts that followed, the world economy expanded rapidly in 1988.

- For OECD countries as a whole, average growth in real GNP reached 4% in 1988, the highest rate since 1984.

- Most of the major industrialized countries posted good performances in terms of output, particularly Japan (+5.8%), the United States (+3.8%), Canada (+4.4%) and the United Kingdom (+4.3%).

- Pressure on prices and wages emerged in a number of OECD areas, in particular the United States and Canada, as signs of overheating appeared. But the inflation rate of OECD countries as a whole remained quite low at 3.8% in 1988.

- Signs of improvement gradually appeared during the year in terms of trade imbalances. The U.S. trade balance recovered somewhat as a result of strong export growth.

Canadian economy

- The Canadian economy showed marked strength in 1988, despite the fears and climate of uncertainty which followed the stock market crash in October 1987.

- Real GDP growth in Canada reached 4.4% in 1988, a remarkably high level considering the maturity of the current economic cycle.

- Strong advances in business investment and firm consumer spending were the main growth factors in 1988.

- The financial position of Canadian corporations improved considerably in 1988. Several firms actually posted record profits during the year, particularly in the forestry and mining and metals sectors.

- Inflation in Canada rose quite moderately in 1988 (4.1%), especially when one considers the constant upward pressure exerted on prices by strong domestic demand and the increased utilization of production capacity. None the less, fears of a new wave of inflation were rapidly rekindled in Toronto (5.1%) as signs of overheating appeared.

- Canada enjoyed strong employment growth in 1988, with the number of persons employed climbing by some 400,000 (+3.2%) since last year. Significant gains were recorded in construction (+53,000) and manufacturing (+86,000).
- Strong job creation in Canada combined with a smaller increase in the labour force led to a marked decline in the Canadian unemployment rate in 1988. This rate fell by one percentage point to 7.8%, its lowest level since 1981.

Quebec economy

- The Quebec economy continued to advance rapidly in 1988, and the province enjoyed its sixth straight year of growth.
- On the basis of GDP, the Quebec economy posted real growth of 5.3% in 1988. This placed Quebec in the forefront of industrialized economies and, along with Alberta and Ontario, the province experienced a growth rate higher than the Canadian average.
- Business investment was the most dynamic component of the Quebec economy in 1988. Boosted by increased utilization of production capacity and a substantial rise in business profits, capital expenditures moved up by 13.2% in 1988. In regional terms, the strong growth in investment benefitted nearly all of Quebec's administrative regions in 1988, especially Saguenay-Lac St. Jean and Abitibi-Temiscaming.
- Residential construction, while down from its record level in 1987, continued to contribute to Quebec's economic growth with activity remaining above the historical average.
- Consumer spending remained strong in 1988, even though consumers had to turn increasingly to credit and continue digging into their savings to finance their purchases during the year.

- The contribution of the foreign trade sector to Quebec's economic growth was very satisfactory in 1988. Overall, international exports loaded in Quebec were up 11.1% in 1988.
- At the sector level, manufacturing industries experienced a high rate of growth in 1988. Boosted by the marked recovery in exports, strong demand for manufactured products on the domestic market and the excellent performance from business investment, the value of Quebec manufacturing shipments rose by 6.9% compared with last year.
- Spearheading strong manufacturing shipments in Quebec in 1988 were manufacturers of durable goods, in particular the primary metals and transportation equipment industries.
- Quebec also posted an excellent year on the job creation front in 1988. The number of persons employed rose by 83,000 during the year, for a 2.8% increase over 1987. The unemployment rate fell by 0.9% to 9.4% in 1988, its lowest level since 1976.
- The sound performance of the Quebec economy in 1988 had a positive impact on the labour market in all Quebec regions. Indeed, every Quebec region posted employment growth during the year, and this contributed in particular to bringing down or steadying their unemployment rates. Job creation was especially high in the Outaouais (7.7%), Abitibi-Temiscaming (7.5%), Gaspé/Magdalen Islands (6.2%), Eastern Townships (5.5%) and North Shore (5.1%) regions.

INTERNATIONAL ECONOMIC SITUATION

Developments in the world economic situation

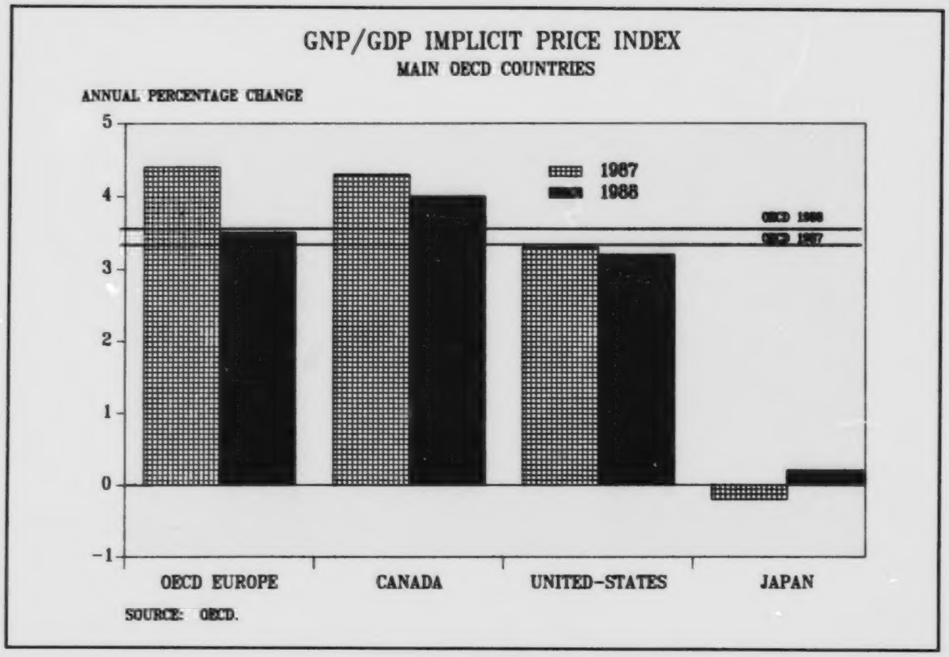
Although hard hit by the stock market crisis of October 1987 and despite the gloomy forecasts that followed, the world economy continued to grow even more strongly in 1988. Repeated intervention from monetary authorities early in the year, through injection of liquid assets, lower interest rates and massive intervention on exchange markets, rapidly restored the confidence of economic agents. For Organization of Economic Co-operation and Development (OECD) countries as a whole, average growth in real GNP rose in 1988 to 4%, the highest level since 1984. This performance was all the more remarkable considering the maturity of the current economic cycle.

Most of the major industrialized countries enjoyed faster growth during the year, although their results varied considerably. Benefitting from strong domestic demand, Japan posted the fastest growth in 1988. The expansionist thrust of Japan's monetary policy played a major role in this regard, notably by spurring residential and manufacturing investment. Good performances in 1988 were also seen in North America, where the U.S. and Canadian economies progressed more strongly than forecast. In the United States, foreign trade, unlike previous years, breathed new vitality into the American economy. Added to this factor was the recovery in capital investment from business and strong household demand. In Europe, although activity grew less quickly than the OECD average, production and investment gains exceeded the forecasts.

The stronger than forecast growth in the OECD zone generated pressure on prices and wages in a number of countries. In the United States and Canada in particular, fears of a new wave of inflation were rapidly rekindled as signs of overheating appeared. In both cases, though, application of a more restrictive monetary policy over the second half of the year was sufficient to steady upward movement in prices and prevent an upsurge of inflation.

Overall, the inflation rate of OECD countries remained quite low in 1988 at 3.8%, or 0.2% higher than the previous year.

Graph 1

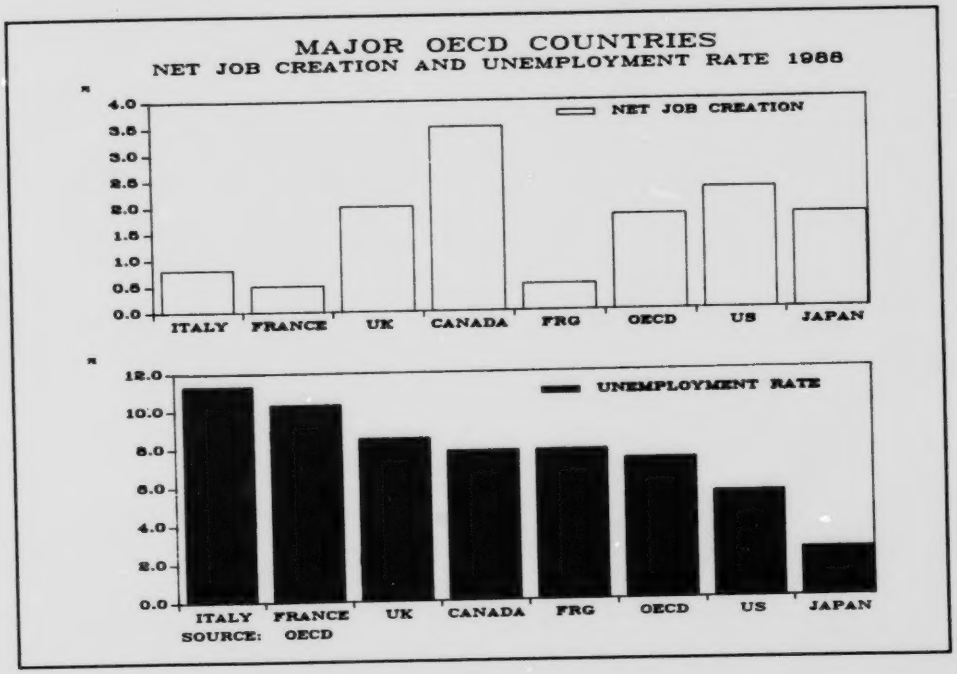


SOURCE: OECD.

Reflecting the faster rate of production, labour market conditions in the OECD zone improved considerably in 1988. In all, the number of persons employed rose by 1.8% during the year with the addition of 6.1 million new workers. At the same time, under the influence of slower labour force growth, the OECD zone's unemployment rate fell to 7.25% in 1988, its lowest level since 1981. But major differences among the main OECD regions remained during this period. Whereas employment growth was particularly strong in North America, bringing the U.S. and Canadian jobless rates down to levels not seen since the mid-1970s, the situation was different in Europe. With the exception of the United Kingdom, Portugal and the Netherlands, most European countries were unable to lower their unemployment rates significantly. A large number of countries still post high jobless rates, among them Ireland (16.5%), Spain (19.5%) and Turkey (15.5%). In Japan, while employment in export sectors suffered from the substantial appreciation of the yen, the unemployment rate showed a slight decline of 0.3% in

1988, falling to 2.5%. Increased demand for manpower associated with the boom in domestic sales was behind this decrease.

Graph 2



SOURCE: OECD

The position of international trade within OECD countries, which had considerably deteriorated for several years owing to the growing U.S. deficit, showed some improvement in 1988. Although substantial trade imbalances remained, signs of a reversal in trade flows gradually appeared during the year. The most striking aspect of this change was the recovery in the U.S. balance of trade in manufactured goods, due to increased exports. Owing in particular to the increased competitiveness of American firms on foreign markets following the realignment of the U.S. dollar, American exports rose by 19%, their greatest increase since 1980. At the same time, with the weakened competitive position of many foreign suppliers on the U.S. market and with consumer and corporate buying habits gradually moving toward domestic goods, the growing penetration of imports into the U.S. contracted somewhat in 1988. Overall, the U.S. current account deficit fell to $132 billion in 1988 from a record $154 billion in 1987. Trends in current balances in Europe varied considerably from country to country. Indeed, the current balances of the countries with the strongest growth in domestic demand, namely the United Kingdom, Spain, Norway, Sweden and Portugal, deteriorated most markedly. On the other hand, countries whose current balances improved, for instance the Netherlands, Denmark and Ireland, featured weak demand considerably below the OECD average. In Japan, the effect of a substantial increase in imports largely due to strong domestic demand and the appreciation of the yen was to lower the current balance surplus somewhat, from a record $87 billion in 1987 to $79 billion in 1988.

Table 1

INTERNATIONAL ECONOMIC SITUATION

major OECD countries
annual % change

COUNTRIES	REAL GNP		Employment		Private consumption deflators	
	1987	1988	1987	1988	1987	1988
United States	3,4	3,8	2,6	2,3	4,5	4,3
Canada	4,0	4,4	2,8	3,5	3,7	3,5
Japan	4,3	5,8	1,0	1,8	-0,1	0,0
France	2,3	3,5	0,1	0,5	3,2	2,5
Germany	1,8	3,8	0,7	0,5	0,5	1,3
Italy	3,1	3,8	0,2	0,8	4,8	5,0
United Kingdom	4,3	4,3	2,1	2,0	3,8	4,5
Total OECD	3,3	4,0	1,6	1,8	3,6	3,8

Source: OECD.

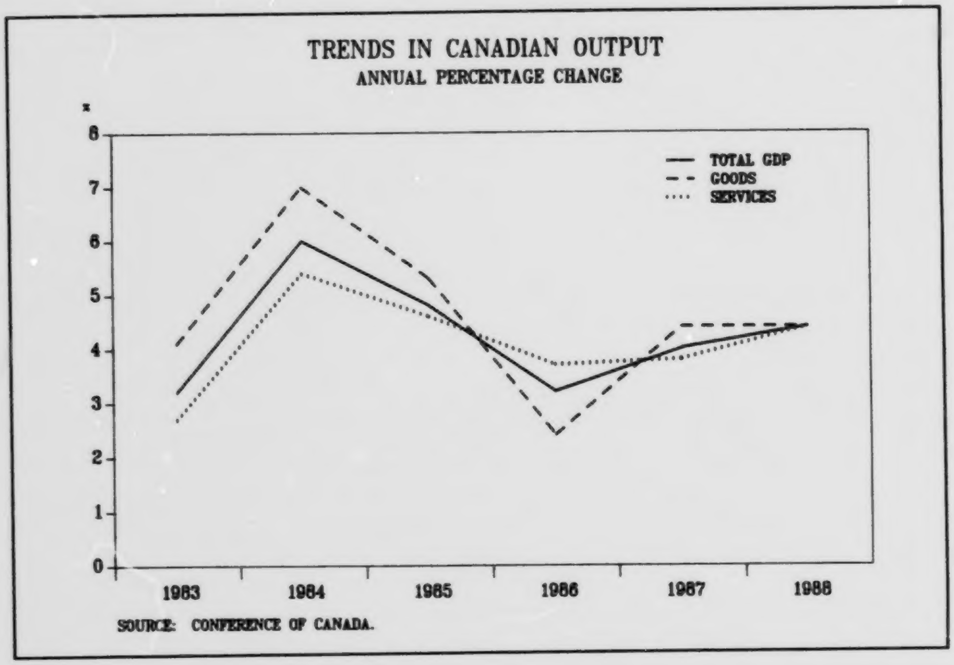
Note: The Canadian figures may differ from those quoted later.

The private consumption deflator includes all goods and services sold in the market, excluding goods and services produced and sold by governments.

CANADIAN ECONOMY

Despite the fears and the climate of anxiety following the October 1987 stock market crash, the Canadian economy showed considerable strength in 1988. Stimulated by higher prices for raw materials, which translated into greater profitability for the natural resources sector, and by the strong advance in business investment, Canada experienced economic expansion for the sixth consecutive year in 1988. Overall, Canada's real GDP growth in 1988 reached 4.4%, a remarkably high level considering the maturity of the current economic cycle. This performance was all the more satisfactory since it made Canada a front runner among major industrialized OECD countries, along with Japan and the United Kingdom, in terms of economic expansion. In 1988, however, substantial differences from one region to another remained. Indeed, while in Central Canada the production apparatus showed signs of overheating, the economy of the Prairies slowed down considerably during the year. The drought which hit North America in Summer 1988, generating a marked drop in agricultural output in Saskatchewan and Manitoba, was the main factor behind this situation.

Graph 3



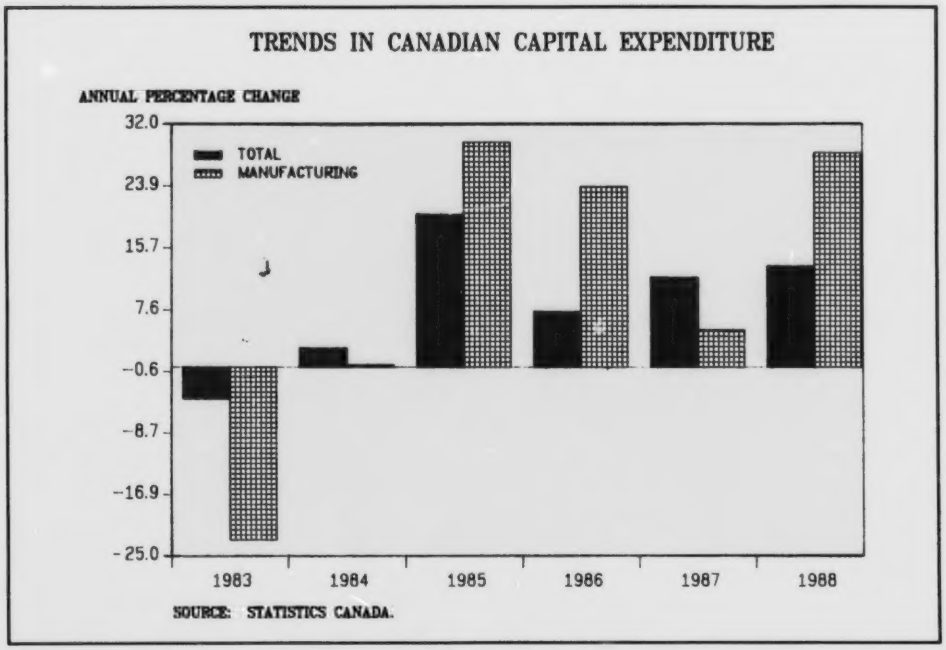
SOURCE: CONFERENCE OF CANADA.

Investment

The most dynamic component in the Canadian economy in 1988 was undoubtedly business investment. Whereas it was anticipated in some quarters that the pessimistic climate bred by the October 1987 stock market crash would have a negative impact on investment, businesses actually invested strongly during the year. Indeed, business investment took over from consumer spending as the engine of economic growth in 1988. According to Statistics Canada's survey on investment (revised intentions), expenditure on new capital assets in Canada totalled $122.9 billion in 1988, 13.3% more than last year. Rising prices for raw materials, the high production capacity utilization rate and the marked increase in corporate profits were behind this strong growth. Added to these factors was competition on the markets which, on the threshold of freer trade, forced firms to modernize further.

Most Canadian provinces contributed to the investment boom in 1988, especially the Western provinces. Increased drilling activity for oil and natural gas wells pushed Alberta's capital expenditure up by some 20% during the year, the largest increase anywhere in Canada. Saskatchewan, which enjoyed a marked rise in investment by utilities, and British Columbia also exceeded the national rate with gains of 14.8% and 16.3% respectively. Under the influence of substantial expenditure by Hydro Quebec and construction of numerous industrial and office buildings, good results were also seen in Quebec, where capital expenditure was up by 13.2%. In Ontario, accounting for more than 40% of all investment in Canada, growth in capital expenditure was below the national average for the first time since 1981. This phenomenon, which none the less occurred after three straight years of marked increases, was attributable to the fact that residential construction reached a ceiling.

Graph 4



SOURCE: STATISTICS CANADA.

Consumer spending

Canadian consumers continued to spend a great deal in 1988. This was all the more surprising since early in the year everyone observed that the individual savings rate had fallen considerably since last year, and a decline in household spending was anticipated. Now, stimulated by modest growth in disposable personal income and the fact that households turned more often to credit to sustain their level of spending, consumer spending showed considerable strength in 1988. The federal tax reform, entailing lower taxation from July 1988 on, greater consumer confidence in the economy and discounts offered by automobile manufacturers also provided substantial support for spending in 1988. In all, household spending on goods and services rose by 3.2% in real terms, a particularly high level considering the maturity of the economic cycle.

As in the previous year, the increases were especially high with respect to purchases of durable goods, automobiles in particular (automobile dealers' sales were up by 10%). Sales of furniture and household appliances were also strong during the year, in reaction to the large number of housing starts in 1987 and 1988.

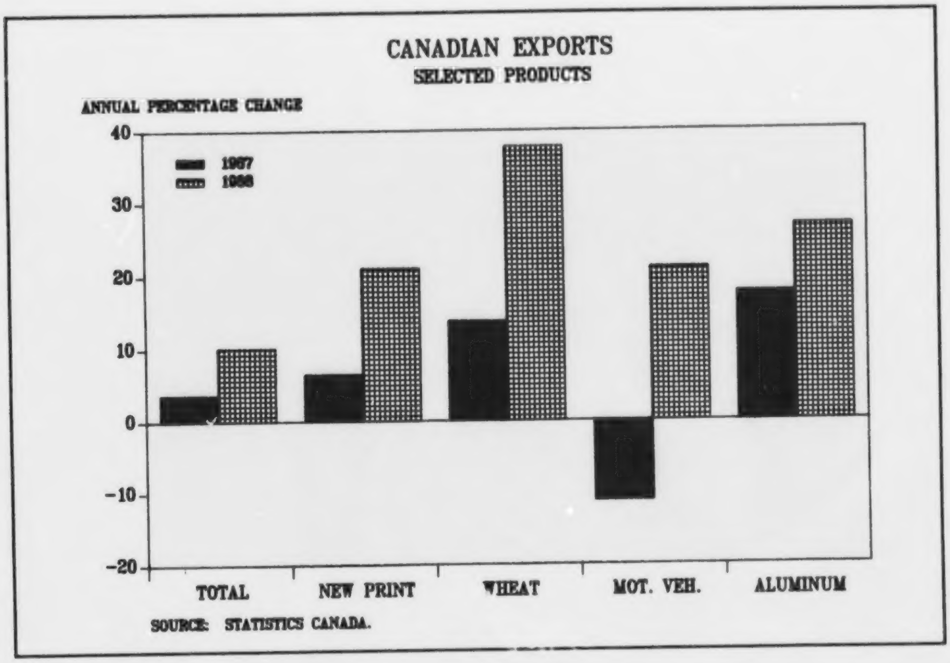
Housing starts

Following a year of unprecedented activity in 1987, residential construction in Canada slowed in 1988. From a high of 245,986 units in 1987, housing starts fell to 222,562 this year. This performance is very satisfactory nevertheless, especially when one considers that since 1980 housing starts have averaged 161,000 units. The overproduction of dwellings observed over the past few years was behind this slowdown in 1988. Compounding these factors were rising mortgage interest rates due to the tightening of Canadian monetary policy, aimed at keeping down inflationary pressure.

Foreign trade

The contribution of exports to Canada's economic growth was particularly satisfactory in 1988. Taking advantage of the strong growth experienced by the U.S. economy and by a number of its main trading partners, Canada's sales abroad exhibited considerable strength during the year. Stronger prices for raw materials also boosted Canadian exports in 1988, since primary products account for some 20% of total exports of Canadian goods. Export shipments from Canada were up to $137.1 billion in 1988, the highest increase (8.7%) since 1984. Overseas sales posted the highest growth rate in 1988. Indeed, stimulated by the depreciation of the Canadian dollar vis-à-vis the European currencies and the yen, which helped make Canadian industry more competitive on foreign markets, exports to those countries rose by more than 20% during the year. As for the United States, which absorbs more than 75% of our exports, demand for Canadian products was also satisfactory in 1988, particularly when one considers the substantial appreciation of the Canadian dollar with respect to the U.S. currency. Overall, Canadian exporters' sales to the U.S. moved up 6.5%, from $94.5 billion in 1987 to $100.6 billion in 1988.

Graph 5



The boom in Canadian foreign trade was largely due to exports of automobile products, notably private cars, trucks and other motor vehicles. Indeed, the latter, which account for more than one-fifth of all Canadian exports, increased by some 25% during the year. This strong advance was basically attributable to the fact that the modernization work on a number of GM Canada plants was completed in 1987, leading to increased production in 1988. Among the other main export products, wheat (+37.7%), newsprint (+21.0%), wood pulp and similar pulp (+18.3%), aluminum (+26.7%), precious metals including alloys (+63.1%) and office machinery and equipment (21.8%) also increased their sales abroad.

Alongside the fast growth in exports, however, imports also posted substantial increases in 1988. Under the influence of higher demand for machinery and equipment for industrial use, basically due to strong growth in business investment, the value of imports climbed by 10.7% to $127.5 billion.

In all, Canada's trade surplus in goods in 1988 was brought down to $9.6 billion from $11.0 billion in 1987. The current account deficit, which also includes services, rose slightly in 1988. Particularly as a result of the increased deficit in the investment earnings account, the current account deficit went from $10.6 billion in 1987 to $11.3 billion in 1988.

Company profits before tax

Reflecting the dynamic economy, the financial position of Canadian companies improved considerably in 1988. Indeed, several firms even posted record profits during the year, in the forestry and mining and metals sectors in particular. In the case of forestry industries, higher selling prices for newsprint, the production capacity utilization rate almost at its maximum and the marked increase in profit margins greatly contributed to increasing company profits in 1988. Stronger prices on international markets enabled mining and metals industries to raise their profits considerably. Added to this was the streamlining carried out in the past few years with respect to costs, which opened the way for greater profitability in 1988. Overall, the pre-tax profits of Canadian corporations rose by 12.8% to stand at $57 billion.

Inflation

Inflation in Canada grew at a relatively modest rate in 1988, especially considering the constant upward pressure on prices due to strong demand, increased utilization of production capacity and tighter markets for many industrial products. Indeed, the consumer price index (CPI) fell 0.3% from its 1987 level to 4.1% in 1988. Accounting for this phenomenon was the tightening of Canadian monetary policy which, through repeated increases in the cost of money, prevented any return of inflation. The moderate nature of wage agreements reached during the year also helped avoid an upsurge of inflation in 1988. Among CPI components, energy, transportation and food behaved particularly well during the year, with year-to-year increases of 0.6%, 1.9% and 2.6% respectively.

Labour market

Stimulated by strong economic expansion, Canada enjoyed energetic employment growth in 1988. According to the Labour Force Survey (LFS), the number of persons employed in Canada rose by 3.2% in 1988 to 12,244,000, with the addition of 383,000 workers since last year. The results were all the more encouraging since they give Canada the fastest employment growth of any major OECD country. Although job creation was spread more evenly among the regions in 1988, considerable differences remained from province to province. Whereas job creation was especially strong in Ontario (+3,7%), where the production apparatus showed signs of overheating, especially in the Toronto area, labour market conditions deteriorated substantially in Manitoba and Saskatchewan, where employment growth was virtually zero. Elsewhere in the country, Alberta, Newfoundland and British Columbia also enjoyed employment growth, with increases of 3.5%, 5.5% and 4% respectively.

Unlike 1987 when almost all jobs created in Canada were full-time, job creation in 1988 relied more on part-time positions. During the year, part-time jobs increased by 4.3% (+77,000), compared with 3.0% for full-time positions.

Growth in employment was especially strong in the construction sector in 1988. Boosted by the recovery in business investment, which translated notably into a marked increase in industrial construction, and by the satisfactory performance of housing starts, the number of people employed rose by almost 55,000, a 7.9% increase since last year. The manufacturing sector also posted substantial gains in 1988 owing to strong export growth. In all, the number of persons employed in manufacturing industries was up by 86,000 during the year, for the strongest employment growth since 1984. Among the main Canadian manufacturing industries, demand for manpower was especially high in paper mills (+10.0%), primary metal industries (+13.2%), transportation equipment (+6.0%) and clothing (+10.6%).

The tertiary sector, accounting for more than 70% of all jobs in Canada, also contributed to the labour market's dynamic stance in 1988. With the help of financial institutions (+17,000 or 5.2%), insurers (+4,000 or 3.0%) and insurance and real estate agencies (+9,000 or 3.8%), and trade (+71,000 or 3.4%), the number of persons employed in the tertiary sector reached a high of 8,679,000, up 3.0% since 1987.

Strong job creation in Canada (+3.2%) coupled with a smaller increase in the labour force (+2.0%) led to a marked decrease in the Canadian unemployment rate in 1988, which fell below the 8.0% mark. Indeed, it dropped by one full percentage point to 7.8%, its lowest level since 1981. While highly satisfactory, these data hid some major regional disparities. Although Ontario continued to stand out from the other Canadian provinces with a jobless rate of 5.0%, unemployment remained high in the Maritime provinces, especially Newfoundland and Prince Edward Island.

Table 2

CANADIAN ECONOMY
main indicators

Indicator	1984	1985	1986	1987	1988
			($ million)		
Real GDP (1981 $)	336 941	353 253	364 540	379 243	395 921
Retail sales	116 080	129 446	140 009	153 733	165 123
Capital expenditure	75 378	90 504	97 086	108 529	122 952
Personal disposable income	300 346	323 708	340 309	363 858	385 579
Company profits	44 161	47 156	42 117	50 733	57 188
Exports	112 384	119 475	120 670	125 087	137 695
Trade balance	19 837	16 401	9 810	10 976	9 595
Current balance	2 695	-1 936	-10 496	-10 576	-11 262
			('000)		
Labour force	12 316	12 532	12 746	13 011	13 275
Employment	10 932	11 221	11 531	11 861	12 244
Housing starts	135	166	200	246	223
Bankruptcies	9,6	8,7	8,5	7,7	8,0
			($)		
Unemployment rate	11,3	10,5	9,5	8,8	7,8
Consumer prices	4,4	4,8	4,1	4,4	4,1
Capacity utilization rate	80,2	82,5	82,1	84,6	87,5*

Note: *(9 months)

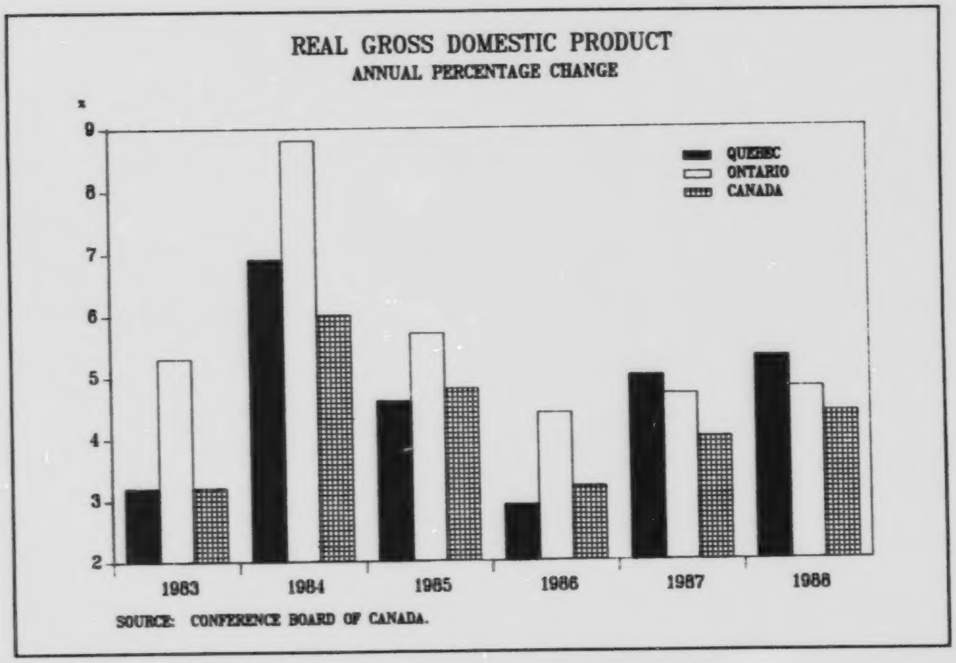
Source: Statistics Canada, Conference Board of Canada, Consumer ans Corporate Affairs Canada, ISTC-Ottawa.

ECONOMIC SITUATION IN QUEBEC

Overview

The Quebec economy continued to accelerate in 1988, with the province enjoying its sixth straight year of expansion. Rapid growth in corporate investment, strong consumer spending and vigorous foreign demand were the main growth factors during the year. Residential construction, while down since 1987, also made a substantial contribution. On the basis of real gross domestic product (GDP), the Quebec economy grew by 5.3% in 1988, a remarkably high level considering the maturity of the current expansion cycle. This performance was all the more positive since it placed Quebec in the forefront of industrialized economies and meant that the province, along with Alberta and Ontario, exceeded the average growth rate of Canada as a whole (4.4%).

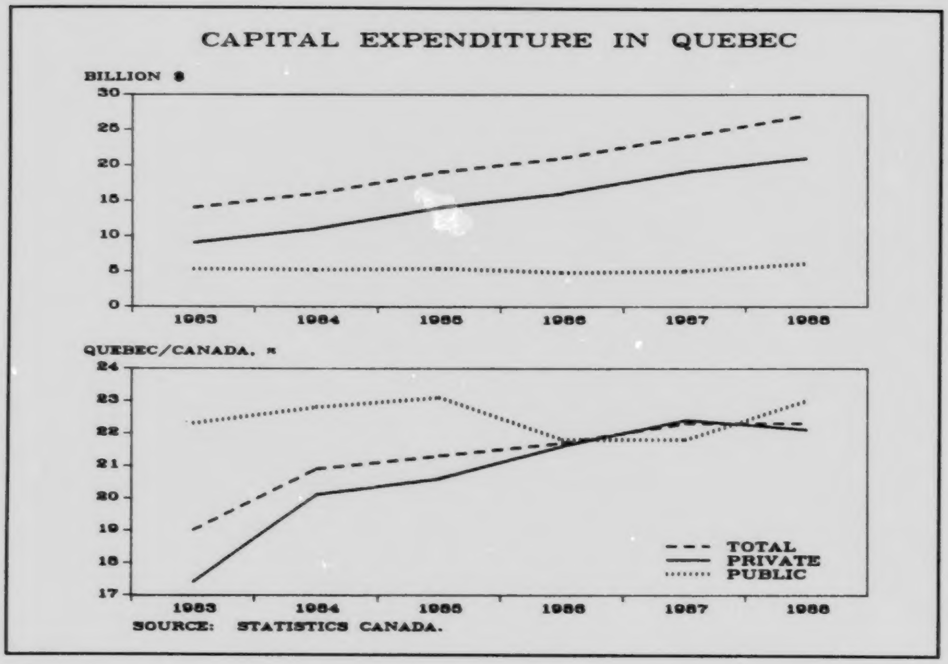
Graph 6



SOURCE: CONFERENCE BOARD OF CANADA.

Business investment was the most dynamic component of the Quebec economy in 1988. Indeed, investment by corporations took over from consumer spending and residential construction as the engine of economic

Graph 7



SOURCE: STATISTICS CANADA.

expansion in 1988. The increased utilization of production capacity and the substantial rise in corporate profits favoured investment during the year. Added to these factors was competition on foreign markets which, as the curtain rises on freer trade (GATT, Canada-U.S. Free Trade Agreement), forced firms to modernize further. Overall, expenditure on new private and public capital assets totalled $27.4 billion in 1988, or 13.2% more than last year. Allowing for inflation, real growth in Quebec capital investment was approximately 9% in 1988. Since similar growth was observed in the other regions of Canada, Quebec's share of Canadian capital expenditure remained virtually unchanged at 22.3% in 1988.

Unlike the last five years, when increased investment was almost totally due to the private sector, the public sector was also responsible for the gains made in 1988. This phenomenon was the result of the marked increase in expenditure by Hydro Quebec, especially in energy transmission and interconnection systems linking the province with the neighbouring U.S. states. Overall, capital expenditure made by the public sector climbed more than 20% in 1988 to $6.1 billion. Private sector firms continued to invest massively in 1988, albeit more moderately than last year. Overall, the private sector made capital expenditures of $21.3 billion during the year, 10.9% more than in 1987. Private sector investment rose markedly in the manufacturing sector (+27.1%) and in trade, finance and business services (+13.6%). In the case of the manufacturing sector, the establishment and modernization of large-scale plants, notably by Norsk Hydro in Bécancour, Alcan in Laterrière, Hyundai in Bromont, Domtar in Windsor and GM in Boisbriand, were the main growth factors in 1988. On the trade, finance and business services front, investment benefitted from the completion of renovation and construction work on numerous large office and commercial buildings, particularly in downtown Montreal. Among other sectors, only residential construction, accounting for some one-third of all Quebec capital investment, did not manage to increase its investment during the year. Indeed, owing to the slowdown in home construction, capital expenditure in residential construction remained virtually unchanged at $8.6 billion in 1988. This stagnation occurred, however, after five straight years of strong growth.

Households' consumer spending, albeit down slightly since last year, was another driving force in Quebec's economic growth in 1988. But consumers had to turn increasingly to credit and continue digging into their savings to finance their purchases during the year. Their debt ratio and savings rate, already heavily handicapped following the strong growth of the past few years, thus deteriorated further in 1988. Several factors provided substantial support for consumption during the year, among them tax reform, which meant lower federal taxes from July 1988 onward, increased consumer confidence in the economy, the 6.5% rise in disposable personal income and the numerous discounts offered by car manufacturers. Together these factors led to a 7.1% increase in retail sales, which totalled $41.6 billion. Most major store categories enjoyed higher sales in 1988. The most significant increases were seen in the automobile sector, notably by car dealers (+9.1%), second-hand car salesmen (+12.0%) and automobive parts and accessories stores (+11.4%). Good results were also posted by sporting goods and accessories stores (+17.9%) and grocery stores, confectionery stores and miscellaneous products (+10.4%). Furniture stores (+9.7%) and hardware products (+11.6%) enjoyed sustained sales thanks to activity in the home construction sector, which remained high.

Residential construction, while down from its record level in 1987, also contributed to the expanding Quebec economy in 1988 with an activity level still above the historical average. Indeed, although the number of housing starts in Quebec fell to 58,062 units in 1988 from 74,179 units in 1987, this was still higher than the average of the past eight years (43,000 units). Largely accounting for the decline in housing starts in Quebec in 1988 was the construction of multiple dwellings, which was down 30% from last year. High vacancy rates in the rental sector and rising mortgage rates were the main obstacles in 1988. To a lesser extent, changes in the capital gains exemption also affected activities during the year. The single-family dwelling sector, for its part, experienced a smaller decrease (16%). The growing inventory of unsold new houses and the inflation of average house prices, making property ownership less accessible, were among the main factors behind this decline.

The approximately 15% increase in the number of commercial bankruptcies in Quebec was one of the few negative points in 1988, especially considering that in Canada as a whole the increase was only 4.9%. In all, 3,078 commercial bankruptcies were declared in Quebec in 1988, compared with 8,031 for the whole of Canada. Thus, four of every 10 commercial bankruptcies across the country in 1988 occurred in Quebec. While this ratio is very high, it should none the less be stressed that Quebec has created many more new businesses in the past few years. Since more firms started up in Quebec, it is not surprising that the province should also have a larger number of bankruptcies. With the exception of primary industries (-17 or -15.3%), all types of industry in Quebec sustained a greater number of bankruptcies, especially wholesale and retail trade (+193 or +18.8%), services (+88 or +10.4%) and manufacturing industries (+43 or +19.6%). The total amounts swallowed up in these bankruptcies also rose considerably during the year, from $459 million in 1987 to $594 million in 1988.

The foreign sector's contribution to Quebec's economic growth was very satisfactory in 1988. Overall, international exports loaded in Quebec were up by 11.1% in 1988, following a decline (-0.5%) in 1987. Part of this development was due to the fact that exports of private cars from GM's Boisbriand plant started up again; in 1987, GM had stopped production in order to modernize its facilities. Leaving aside this exceptional circumstance, the growth rate of Quebec exports stands at 3.8%. Foreign demand for manufactured materials and non-edible finished products was particularly high during the year, with exports up by 8.7% and 16.6% respectively. More specifically, 1988 was a particularly good year for exports of aluminum and metal alloys (+49%), newsprint (+16.1%) and wood pulp (+31.5%).

The expansion of world-wide markets and the resulting increase in competition force businesses to invest more in research and development (R&D) in order to survive and grow. Because of the importance of this topic, the analysis by sector contains a report on the R&D work being conducted within the various industries in Quebec. According to the most recent information (1986), more than half of the R&D in the province is performed by commercial firms. R&D expenditures of $872 million, or 23% of all industrial research and development spending in Canada, are made by 830 such companies. Quebec firms employ more than 12,000 people in R&D tasks, of whom more than one-half are professionals (scientists, engineers, executives and managers). Most R&D work in Quebec is carried out in the secondary (64%) and tertiary (35%) sectors. Less than 1% of R&D activities is devoted to the primary sector. In Canada as a whole, businesses which carry out R&D work spend 1.4% of the value of their sales on such activities. But this ratio varies according to the sector, standing at 1.5% for the secondary (manufacturing) sector, 1.2% for services and 0.7% in the primary sector. No data for province-by-province comparison are available.

ECONOMIC SITUATION IN QUEBEC
main indicators

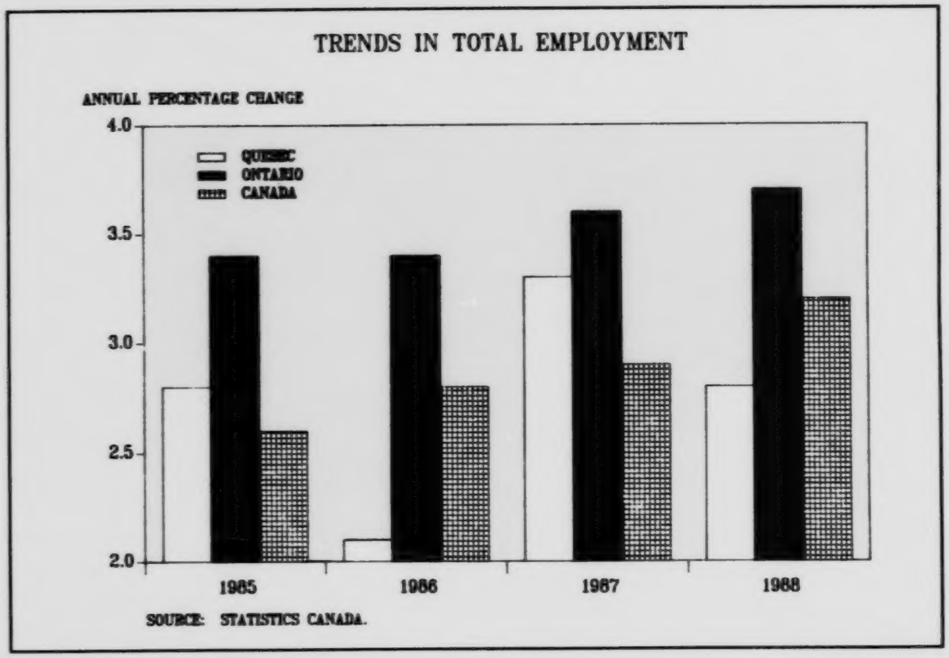
Indicators	1984	1985	1986	1987	1988
			($million)		
Real GDP (1981 dollars)	75 231	78 687	80 946	85 032	89 548
Retail sales	28 713	31 636	34 593	38 866	41 615
Exports	17 356	18 611	19 946	19 839	22 039
Capital expenditure	15 748	19 240	21 030	24 179	27 362
private sector	10 544	13 837	16 244	19 211	21 310
public sector	5 204	5 403	4 786	4 968	6 052
Personal income	91 192	98 585	104 597	112 473	121 414
Personal disposable income	71 610	77 130	80 898	86 266	91 887
Wages and salaries	50 717	54 436	58 276	63 278	67 912
			('000)		
Housing starts	41,9	48,0	60,3	74,1	58,1
Bankruptcies	3,3	2,8	2,8	2,7	3,1
Person-days lost	1 112	1 134	2 268	1 603	1 447

Source: Statistics Canada, Conference Board of Canada, Quebec Bureau of Statistics, Consumer and Corporate Affairs Canada, and Quebec Department of Labour.

LABOUR MARKET

The job creation picture in Quebec was excellent in 1988, since the province's economy performed more strongly than forecast. According to the Labour Force Survey (LFS), the number of persons employed in Quebec was up by 83,000 in 1988, or 2.8% higher than last year. While this was below the 93,000 jobs created in 1987, it is still remarkable, especially considering the maturity of the current cycle of economic expansion.

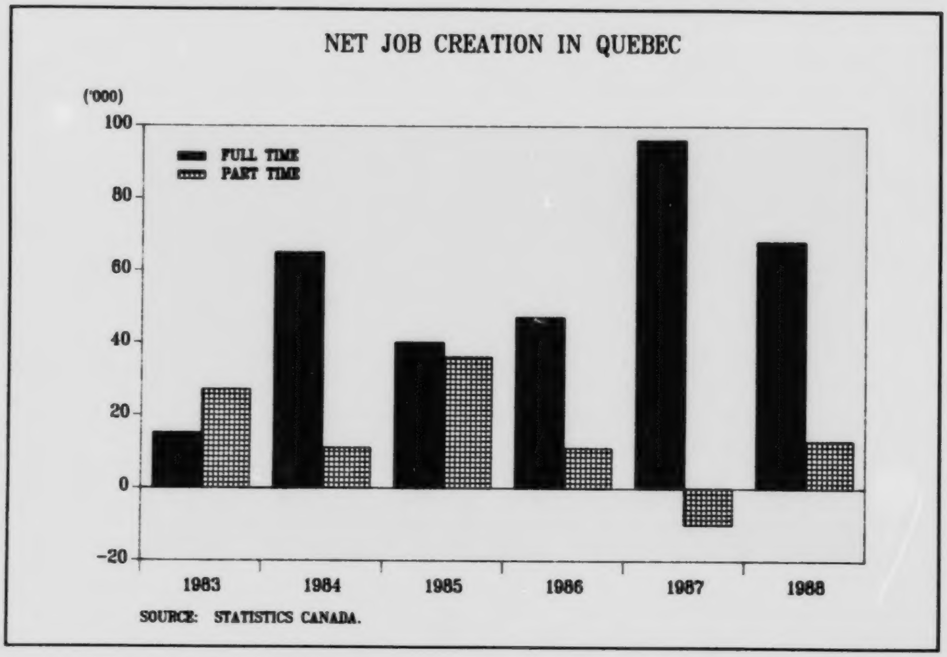
Graph 8



Interestingly, some 90% of new jobs in Quebec in 1988 were full-time. Overall, the number of full-time positions was up by 68,000 to 2,592,000 in 1988, while part-time jobs went from 395,000 in 1987 to 408,000 in 1988.

Employment growth in Quebec did not favour all economic sectors equally in 1988, with the manufacturing, construction and business services sectors accounting for a substantial proportion of job gains during the year.

Graph 9



In the case of manufacturing industries, the export recovery, higher corporate investment and strong domestic demand led to an exceptional increase of more than 50,000 new jobs in 1988, an all-time record. On average, the number of people working in the manufacturing sector in Quebec hit a record 612,000 in 1988, 9.4% more than last year. This performance was all the more remarkable since it meant the manufacturing sector accounted for more than 60% of all jobs created in Quebec in 1988. On the construction front, strong activity in the industrial and commercial sectors and the large number of engineering projects more than offset the downward impact of the residential sector. Overall, the number of persons employed rose by a substantial 10.4% from 158,000 in 1987 to 174,000 in 1988. This result is all the more exceptional since it means that the construction sector, accounting for a mere 5.8% of total employment, was responsible for close to 20% of all new jobs created in Quebec.

Unlike the previous year, the contribution of the tertiary sector to job creation was down considerably in 1988. Indeed, this sector, accounting for more than 70% of total employment, provided only about one-quarter of new jobs during the year, compared with 80% in 1987. In all, the number of persons employed in the tertiary sector in Quebec rose by only 0.9% to

2,106,000, its lowest growth rate in the decade apart from 1982. Most tertiary subsectors sustained job losses during the year, among them trade (-0.1%), public administration (-4.0%), utilities (-0.1%) and finance, insurance and real estate (-1.8%). In fact, only services, in particular business services, recorded significant job gains during the year, with a 3.2% increase since 1987. In the case of the finance, insurance and real estate sector, the stagnating employment situation was primarily due to slower activity in real estate and financial markets. The primary sector also ran against the general growth trend, with the number of people employed down more than 5% since last year.

Employment growth did not benefit all age groups equally in 1988. Indeed, while the number of jobs grew by 26,200 (+3.7%) among workers aged 45-64, it rose by only 2,700 (+0.5%) among young people aged 15-24. For the largest group of workers, those aged 25-44, the year was excellent, with the addition of 46,200 jobs (+2.8%) in 1988.

Quebec's sound performance on the employment front led to a drop of 24,000 in the number of unemployed in 1988. But, owing to the larger number of labour market participants (+58,000) due to the higher participation rate, Quebec's jobless rate did not fall steeply during the year. None the less, it dropped by 0.9% to 9.4% in 1988, its lowest level since 1976. This improvement, albeit encouraging, was insufficient to narrow the gap between Quebec and Canada as a whole (7.8%) or Ontario (5.0%).

Table 4

THE LABOUR MARKET IN QUEBEC
main indicators

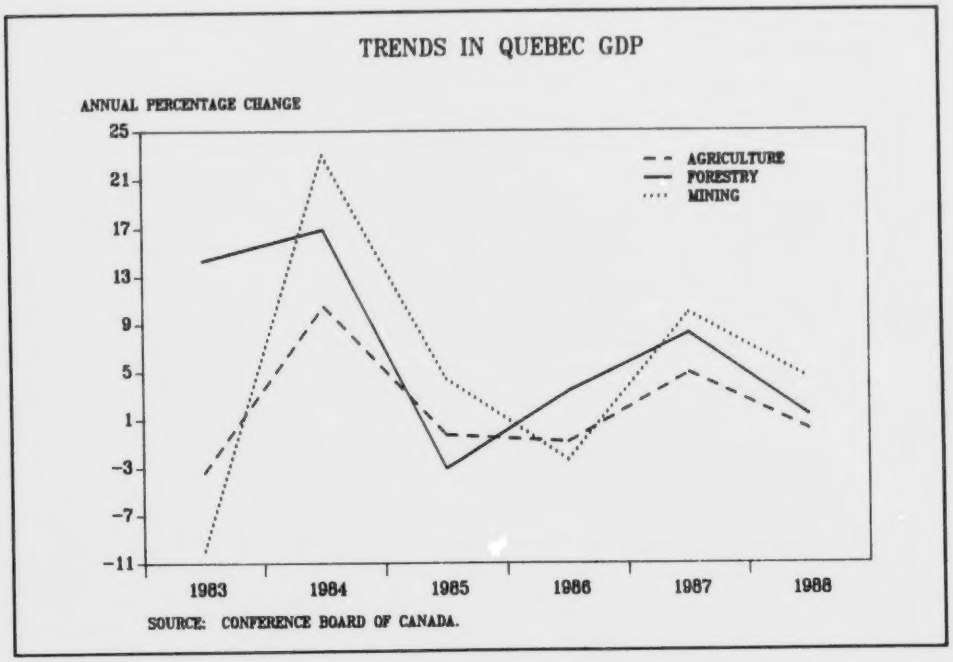
	1984	1985	1986	1987	1988
Population 15 years and +	5 024	5 055	5 090	5 138	5 178
15 to 24	1 119	1 081	1 043	1 010	973
25 to 44	2 079	2 120	2 160	2 204	2 240
45 and over	1 826	1 854	1 887	1 924	1 965
Labour force	3 087	3 140	3 174	3 253	3 312
15 to 24	693	682	668	657	650
25 to 44	1 630	1 687	1 740	1 796	1 834
45 and over	764	771	766	800	828
Employment	2 692	2 768	2 825	2 918	3 001
15 to 24	556	559	556	560	563
25 to 44	1 441	1 506	1 567	1 623	1 669
45 and over	695	703	702	735	769
Participation rate	61,4	62,1	62,4	63,3	64,0
15 to 24	61,9	63,1	64,1	65,1	66,8
25 to 44	78,4	79,6	80,6	81,5	81,9
45 and over	41,8	41,6	40,6	41,6	42,1
Unemployment rate	12,8	11,9	11,0	10,3	9,4
15 to 24	19,9	18,0	16,8	14,8	13,4
25 to 44	11,6	10,8	9,9	9,6	9,0
45 and over	9,5	9,2	8,6	8,3	7,5

Source: Statistics Canada, Labour Force Survey.

PRIMARY SECTOR

Quebec's primary sector, which includes agriculture, forestry, fishing and mining, had a mixed performance in 1988. Overall, gross domestic product (GDP) grew by only 1.6% in real terms during the year, or considerably more slowly than the economy as a whole (5.3%). Among the components of the primary sector, only the mining industry recorded significant GDP growth (4.4%) in 1988. A degree of prosperity was also seen among farmers, owing to increased demand for most agricultural products, relatively good harvests and firm prices. On the other hand, 1988 was less positive for the logging industry and fishermen. Forestry firms suffered from the slower demand for their products, largely due to the smaller number of housing starts, whereas the main obstacle facing marine fisheries was the low price of most categories of fish, shellfish and crustaceans.

Graph 10



SOURCE: CONFERENCE BOARD OF CANADA.

Low output growth and increased mechanization of operations, with consequently smaller manpower requirements, had an impact on employment in 1988. According to the Labour Force Survey (LFS), the number of persons employed in the primary sector in Quebec stood at an average of 109,000 during the year, 5.2% below the 1987 level. Substantial job losses were recorded in agriculture (-5,000 or -6.8%) and forestry (-3,000 or -15.8%). In fact, only the mining sector managed to keep its employment level steady during the year.

Spending on plant modernization and acquisition of new production facilities was sustained in 1988. In all, capital investment in Quebec's primary sector in 1988 reached $916 million, some 10% more than in 1987. Forestry firms were largely responsible for this increase, with their capital expenditure almost doubling during the year to $37.1 million.

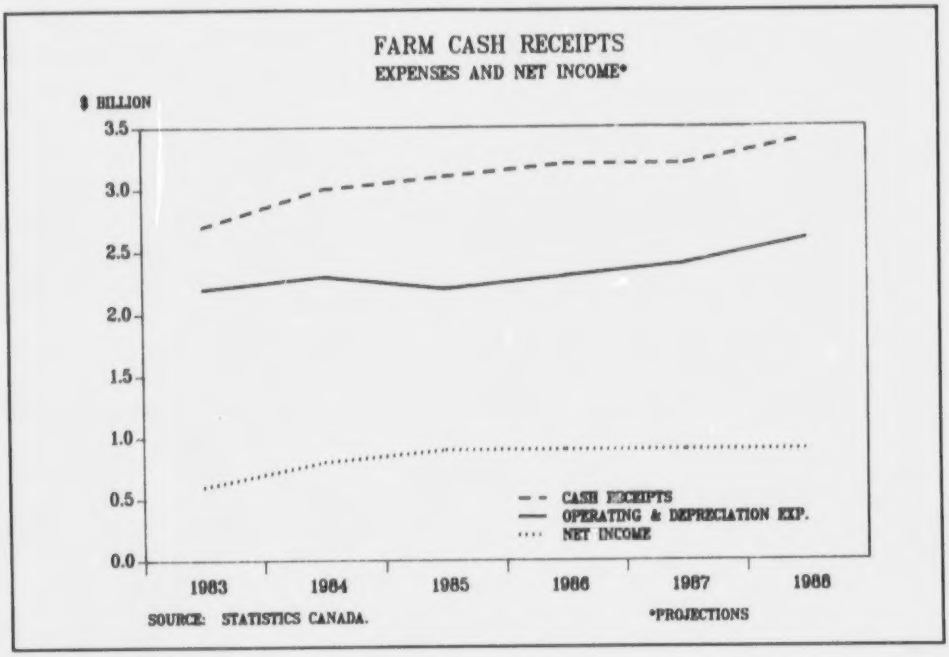
Agriculture

Quebec agriculture continued to pick up again in 1988. Benefitting from higher demand for most products, relatively good harvests and firm prices, Quebec farmers somewhat improved their financial position during the year. For the second year running, Quebec of all Canadian provinces had the lowest proportion of farms in financial difficulty. This was reflected in a substantial drop in the number of farm bankruptcies, which went from 67 in 1987 to 54 in 1988. Note that in 1985 and 1986, the figures were 124 and 103 respectively. Thus, whereas close to one in three farm bankruptcies in Canada was attributable to Quebec in 1985, this ratio fell to 16% in 1988.

This relative prosperity is all the more encouraging since elsewhere in the country, primarily in the Prairies, the agriculture sector went through one of its worst periods in a long time. Indeed, farmers in Saskatchewan and Manitoba had some difficult moments in 1988; faced with falling grain prices, high interest rates and harsh weather conditions, a number of them sustained substantial losses. The fact that the Quebec agriculture sector is more diversified and farm income less tied to grain production explains its better performance in 1988. Unlike the Western provinces, whose agricultural activity is largely based on wheat production, Quebec did not feel the impact of falling world grain prices. With their activities dominated instead by dairy products and livestock, Quebec farmers were in a more enviable position in 1988.

Farm cash receipts in Quebec, including farmers' earnings from product sales and certain government deficiency payments, rose by 5.2% to $3.4 billion in 1988. Earnings from crops posted the highest gains

Graph 11



SOURCE: STATISTICS CANADA.

during the year, notably corn (+$47.9 million or +19.9%), oats (+$6.1 million or +67.4%), barley (+$3.4 million or +15.7%) and greenhouse and nursery products (+$10.1 million or +16.1%). In all, earnings from crops amounted to $535.4 million in 1988, an increase of 8.9% since last year. Livestock, accounting for more than 70% of all farm cash receipts, performed less well. While the situation was particularly good with respect to dairy products and poultry, owing to continued high demand, results were more disappointing for pork and cattle producers. Dairy production, the mainstay of Quebec agriculture, accounting for more than one-third of total earnings generated, benefitted especially from increased consumption of yoghurt and cheese and a slight increase

Table 5

FARM CASH RECEIPTS IN QUEBEC
main products
($ million)

	1983	1984	1985	1986	1987	1988
Crops	436,1	488,1	544,3	498,0	491,6	535,4
Corn	115,8	142,2	158,5	126,1	96,0	143,9
Vegetables	83,6	94,2	102,6	111,0	97,1	97,3
Potatoes	40,9	48,4	36,9	45,1	50,2	46,4
Fruits	35,1	35,3	42,9	41,4	45,1	45,9
Other crops	160,7	168,0	203,4	174,4	203,2	201,9
Livestock and products	2 069,9	2 249,9	2 209,7	2,370,3	2 404,6	2 386,0
Dairy products	878,3	997,4	986,4	1 011,9	1 045,1	1 126,7
Hogs	563,5	596,3	567,1	672,8	651,8	532,0
Cattle and calve	296,3	276,6	273,7	296,1	219,7	192,7
Poultry	215,9	251,7	252,9	267,1	270,3	311,0
Other livestock and products	115,9	127,9	129,6	122,4	217,7	223,6
Other receipts	233,5	311,1	338,9	359,3	321,4	464,5
TOTAL	2 739,5	3 049,1	3 092,9	3 227,6	3 217,6	3 385,9

Source: Statistics Canada.

in milk sales. Overall, earnings from dairy products rose 7.8% from $1.05 billion in 1987 to $1.13 billion in 1988. The slower activity posted by pork producers was a result of falling prices due to overproduction. Moreover, cash receipts from pork production fell by 18.4% in 1988 to $531.9 million.

According to the Labour Force Survey (LFS), Quebec's agriculture sector provided employment for an average of 69,000 people in 1988, or 6.8% fewer than last year. Quebec's share of persons employed in Canadian agriculture stood at 15.5% in 1988.

Expenditure committed to modernization of equipment and acquisition of new production facilities barely increased in Quebec's agriculture sector in 1988. During the year, capital investment stood at $418 million, just 1.7% higher than in 1987.

Forestry

Quebec's logging industry, which provides pulpwood for pulp and paper mills and logs for sawmills, suffered from slower demand for its products in 1988. On the one hand, the wood industry had some difficult moments during the year, due primarily to the drop in residential construction and the maintenance of an 8% export tax on lumber to the U.S. by way of countervailing duties, which led to a decline in purchases of logs. On the other hand, forestry firms were unable to take full advantage of the strong growth in the pulp and paper industry, as this was partly due to higher selling prices. Added to these factors is the growing use of wood chips and other sawmill waste in the manufacture of paper, which entails a reduction in purchases of pulpwood, one of the main products of logging in Quebec. Overall, the Quebec logging industry's GDP grew by a mere 1.3% in 1988, although it had performed consistently better since 1985.

Labour market data also reflected the weak performance of logging activity in Quebec in 1988. According to the Labour Force Survey (LFS), an average of 16,000 people worked in forestry in 1988, 15.8% fewer than last year. Quebec's share of all Canadian jobs in the industry went from 27.9% in 1987 to 22.5% in 1988.

The sector's most encouraging performance in 1988 was in capital investment. Following three straight years' stagnation, capital expenditure by the logging industry in Quebec almost doubled, moving up to $37.1-million. This strong recovery was due to increases of $8.9 million in purchases of more modern equipment and $9.4 million in the construction of new buildings.

Another feature of 1988 was the renewal of the federal development program for private forest land in Eastern Quebec for another five years. An additional $40 million will be allocated to this program, which is intended to assist owners of private woodlots in Eastern Quebec, particularly with respect to silvicultural work, protection of woodlots against devastation, and drainage in forest land.

Fishing

To judge by the landed value of catches, 1988 was a less successful year for marine fisheries in Quebec. Indeed, the value of landings by Quebec fishermen totalled $97.6 million during the year, down a substantial 23% from 1987. Low prices for most categories of fish, shellfish and crustaceans were the main obstacle in 1988. This was due to the fact that the market was not as firm as forecast, especially in the United States where fish stocks remained high. In addition, fish landings fell by 8% to 89,187 tonnes in 1988 from 97,274 tonnes in 1987.

The value of groundfish landings, the most numerous species being cod, redfish and Greenland halibut, dropped the farthest, down $19.9 million or 42% from the previous year. In the case of cod, for which the landed value of catches went from $23.5 million in 1987 to $14.6 million in 1988, the shortfall is due both to the lowering of quotas in certain zones and to lower prices. Fishermen of pelagic and estuary fish, notably herring, mackerel, salmon and smelt, were not spared this negative situation. Although the level of their catches was virtually the same as in 1987, these fishermen saw their earnings cut almost in half to $2.6 million in 1988. Shellfish and crustaceans, accounting for some 70% of Quebec marine fishermen's earnings, experienced less harsh market conditions. Thanks to the good performance of snowcrab, Quebec's main marine fishing product, the total landed value of catches fell by only 8% to $67.8 million in 1988.

The restructuring upon which the Quebec fishing industry has embarked continued to stimulate investment in 1988. The modernization effort, in particular the purchase of new fishing craft, translated into capital investment of $12.7 million in 1988, a 23.3% increase since last year.

Mining

With the exception of exploration, where activities were slowed by the tax reform, the mining industry in Quebec performed quite well in 1988. Overall, the value of shipments of Quebec minerals, including metal mining, industrial minerals and building materials, remained close to last year's level at $2.7 billion in 1988. With a booming metals market owing to faster growth in the world economy, the prices of several minerals produced in Quebec underwent substantial increases during the year. On the other hand, the quantities mined decreased, especially in the metal mining sector.

Industrial minerals posted the best performance during the year, largely due to the recovery in the asbestos industry. In fact, after 10 straight years of decline, Quebec's asbestos industry staged quite a comeback in 1988. Boosted by higher world consumption, especially in developing countries, and the exhaustion of stocks following numerous mine closures elsewhere in the world, signs of recovery gradually appeared during the year. Added to this was the fact that the anti-asbestos campaigns ran out of steam, giving way to greater consciousness-raising with respect to safe uses for asbestos. This phenomenon was due to the adoption in June 1986 of the International Labour Organization's Convention on Safety in the Use of Asbestos, which helped users to regain confidence. In all, the value of Quebec asbestos shipments rose by more than 10% to $190.3 million in 1988. A total of 533,000 tonnes of asbestos were mined in 1988, about 6% more than last year. This recovery was all the more encouraging because since 1979 asbestos shipments had been in free fall due to problems on foreign markets where this product was subject to a widening ban. We are, however, still far from such record years as 1979, when 1,344,000 tonnes of asbestos were mined. During the year, reduced output following the closure of the Bell mine was offset by increased activity in the other sites worked by Lab Chrysotile.

The metal mining sector, heavily concentrated in the Abitibi-Temiscaning region, where most of Quebec's gold, silver, copper and zinc mines are located, was less successful in 1988. While certain common metals, such as copper and zinc, enjoyed record prices due to strong demand and low inventories worldwide, the total value of metal mining output dropped to $1.63 billion in 1988, down 2,9% from last year. This is largely explained by factors specific to certain mines, especially the closure of Gaspé Mines in Murdochville. Indeed, this closure was a hard blow for the copper sector in 1988. Note that Gaspé Mines' mining operations had ceased in April 1987 following a fire that devastated the mine's underground galleries. The indefinite closure of the mine because of low copper prices had subsequently been annonced by management. At the same time, the reduction in the amount of ore taken from the last reserves in Noranda's Norita and Lake Matagami mines, as well as the temporary closure of the Mobrun mine in August 1988 for development work and construction of a concentrator, affected both zinc and copper output.

In the case of gold, still the biggest money-maker in the Quebec mining sector in 1988, the value of shipments reached $562 million, virtually the same as in 1987. During the year, although the price of gold fell 2% below its 1987 level, posting a yearly average of US $437, seven new gold mines started production in Quebec, raising the volume of Quebec's gold shipments by 10% in 1988.

Silver producers experienced some difficulties in 1988, with shipments down 25% in volume and 40% in value since last year. This decline was largely due to slower activity at Noranda's Lake Matagami and Norita zinc mines and, to a lesser extent, to the low silver content in ore from Explorations Muscocho's Montauban mine, and the 6% drop in the price of silver.

The signs of recovery observed in Quebec's mines were not accompanied by an increase in employment in 1988. According to the Labour Force Survey (LFS), the number of persons employed in the Quebec mining industry remained unchanged at 21,000 during the year. Employment growth of 1.7% was recorded in the other regions of Canada, so Quebec's share of the Canadian total went from 11.7% in 1987 to 11.5% in 1988.

In 1988, mining exploration in Quebec was much less intense than in 1987, with sources of financing shrinking substantially. Due to changes in the tax treatment of flow-through shares and investor apathy following the October 1987 stock market crash, amounts underwritten in flow-through shares for exploration expenses in Quebec went from a record $530 million in 1987 to approximately $130 million in 1988. In the field, this lack of funds translated into a 20% decrease in exploration expenditure, which stood at $371 million.

Among highlights of the Quebec mining industry's year in 1988 were:

- Under its privatization policy, the Quebec government announced the sale of the facilities of Seleine Mines, on the Magdalen Islands, to the Canadian Salt Company Ltd., a subsidiary of the U.S. firm Morton Thiokol, for $35 million.

- Seven new gold mines started production in Quebec in 1988: Orion (Malartic Hygrade Gold Mines), Pierre-Beauchemin (Cambior), Donald J. Laronde (Dumagami Mines), Kierens (Aur Resources), Etang d'Or Est (Inco and Golden Knight Resources), Francoeur (Rouyn Mining Resources) and Sleeping Giant (Perron Gold Mines).

- With the price of copper rising, Noranda announced investment of $20 million to restart mining operations at Gaspé Mines in Murdochville, (the mine was destroyed in April 1987 following a major fire). Mining of the copper deposit should begin in March 1989.

- The provincial asbestos corporation (SNA) handed over the building supplies division of its subsidiary, Atlas Turner, to U.S. interests. SNA announced the sale of Atlas Turner's asbestos-based fibrocement panel plant in Montreal to Supradur Canada, a subsidiary of Supradur Company of New York, for $3 million.

In Quebec, five mining firms are conducting research and development work. Two of them are peat extraction companies, one is an asbestos mine, another a granite quarry and the last one belongs to the "other metal mines" category. These five firms spend some $12 million a year on R&D, a level which has remained steady since 1984. A very high proportion of this expenditure (95%) is running expenses, with barely 5% devoted to capital investment. Nationally, those mining firms which conduct R&D work spend approximately 0.7% of the value of their sales on such activities. A total of 154 people, of whom about one-third are professionals, are assigned to R&D in the Quebec mining industry.

Table 6

PRIMARY SECTOR IN QUEBEC
main indicators

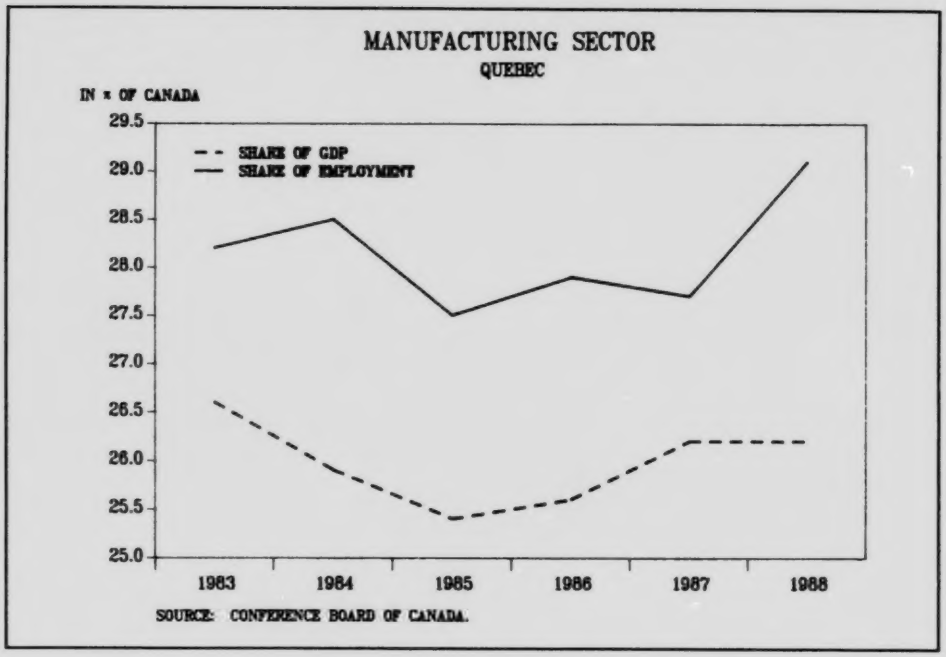
	GDP ($81 million)		Employment ('000)		Capital expenditure ($ million)	
Group	1987	1988	1987	1988	1987	1988
Agriculture	1 660	1 660	74	69	411	418
Forestry	478	484	19	16	19	37
Fishing and trapping	42	42	1	3	10	13
Mines	1 022	1 066	21	21	393	448
Total	3 202	3 252	115	109	833	916

Source: Statistics Canada, Conference Board of Canada.

MANUFACTURING

Quebec's manufacturing sector exhibited remarkable growth in 1988 owing to a marked recovery in exports, strong demand for manufactured products on the domestic market and the excellent performance of business investment. Most producers increased their sales and posted high profits during the year, particularly in durable goods manufacturing industries.

Graph 12



SOURCE: CONFERENCE BOARD OF CANADA.

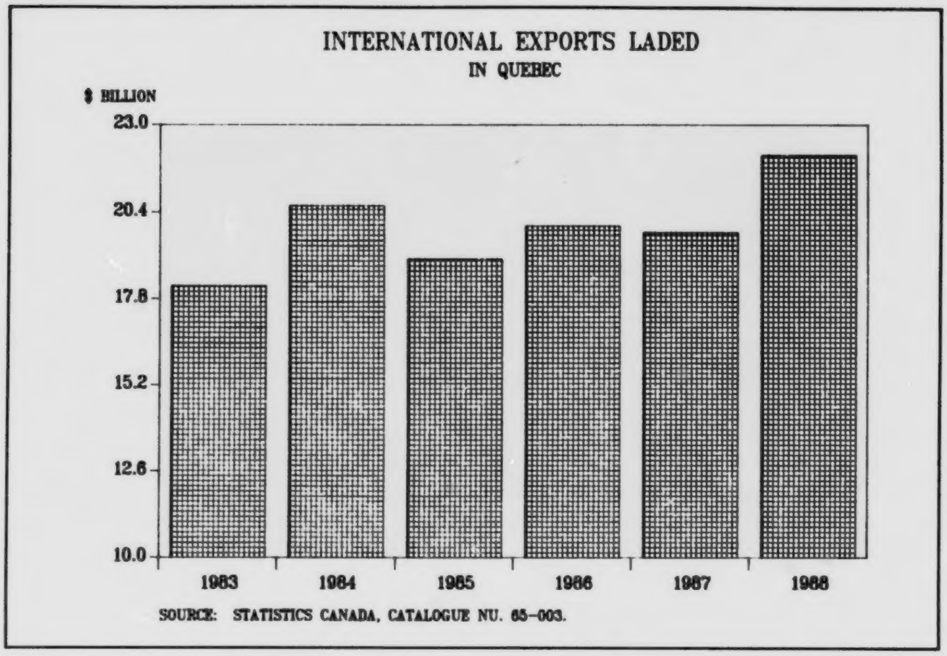
For 1988 as a whole, the value of Quebec manufacturing shipments totalled $72.8 million, 6.9% more than last year. Taking into account the 4.2% increase in the Canadian industrial selling price index, real growth in Quebec's manufacturing sector was about 3%. As a similar performance was seen elsewhere in Canada, Quebec's share of Canadian manufacturing shipments remained unchanged at 25.2%.

The rapid growth in Quebec manufacturing shipments benefitted almost all manufacturing industries in 1988. Only producers of wood (-1.2%), tobacco (+0.1%), metal products (+0.4%), food (+0.6%) and petroleum (-16.7%) had some difficulty, with shipments lower than or virtually the same as last year. Quebec's wood producers were hit by the slowdown in housing starts throughout North America, new stumpage fees in Quebec and the maintenance of an 8% tax on lumber exports to the United States. The main stumbling block for the petroleum products industry was the downward fluctuation of prices.

Spearheading Quebec's strong shipments in 1988 were manufacturers of durable goods, with an 11.4% growth rate, as against 3.8% for non-durable goods. The primary metals and transportation equipment industries were the main growth components among durable goods producers, with shipments up by 17.5% and 22.1% respectively. For primary metals processing, especially aluminum, producers took advantage of strong demand on world markets and the low level of stocks to significantly increase their sales. In the transportation equipment industry, gains were attributable to the fact that production started up again at GM's automobile assembly plant in Boisbriand and to the good performance of the aeronautical sector. Other industries also posted good results in terms of shipments during the year, among them manufacturers of electrical products (+15.2%), machinery (+15.2%), plastic products (+11.0%), chemical products (+11.3%), printing (+10.2%) and pulp and paper (+9.4%). For the latter, higher pulp and newsprint prices helped considerably in 1988.

Unlike the last two years, when export growth had slowed substantially, foreign trade was a major contributor to the expansion of Quebec's manufacturing sector in 1988. The value of international exports loaded in Quebec totalled $22 billion in 1988, a marked 11.1% more than the previous year. Part of the dynamic performance of Quebec's foreign trade was due to the revival of exports of private cars from GM's Boisbriand plant; in 1987, interrupted production at that plant had entailed a marked decline in export shipments of automobiles from Quebec. As for the other main products, 1988 was a good year for exports of aluminum (+49%), wood pulp (+31.5%) and newsprint (+16.1%). In all, exports of manufactured goods and inedible finished products grew by 8.7% and 16.6% respectively in 1988.

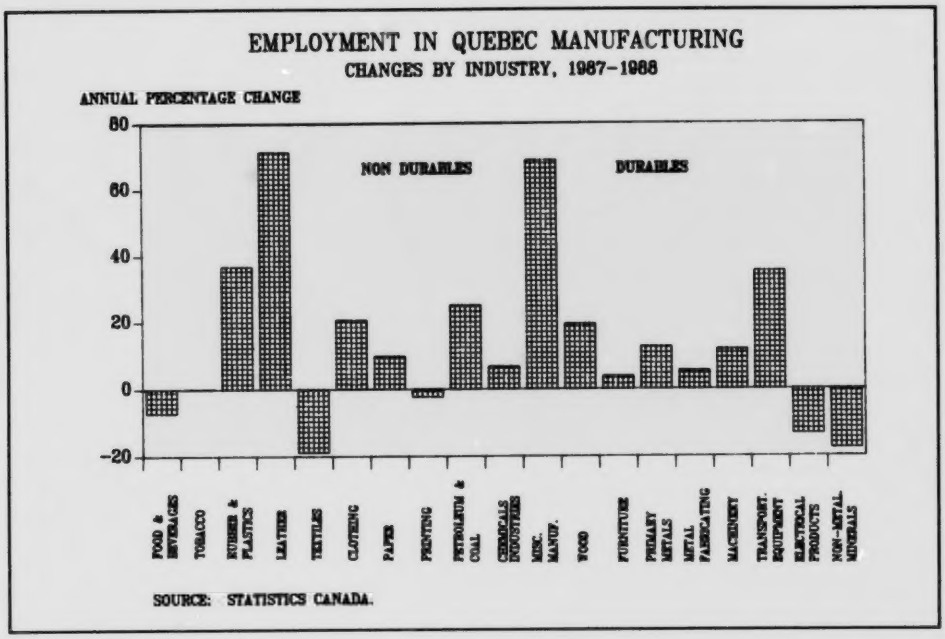
Graph 13



The United States remained an attractive foreign market for Quebec exporters in 1988, with the value of Quebec exports to the U.S. rising by 5.6%. But other destinations, such as Japan and the EEC, were more dynamic foreign markets in 1988, with the result that the U.S. share of total Quebec exports fell to 74.7% in 1988 from 77.3% in 1987. This was due to the moderating influence on Quebec exports to the United States of the appreciation of the Canadian dollar against the U.S. currency. Quebec exporters were at their most successful in Japan in 1988. Benefitting from the strong yen, which makes the price of Quebec products advantageous, the Japanese market's greater openness to foreign products and the exceptional strength of the Japanese economy, Quebec exports to Japan leaped up by 34.2% to $454 million in 1988. Japan's share of Quebec exports went from 1.7% in 1987 to 2.1% in 1988. Quebec exports to the European Economic Community (EEC), the province's second largest export market, increased substantially owing to the depreciation of the Canadian dollar against its main currencies. Most European countries bought more Quebec products, especially West Germany (+24.5%), the Netherlands (+75.6%) and France (+36.4%).

The strength of manufacturing activities in Quebec led to an exceptional increase in manufacturing jobs in

Graph 14



EMPLOYMENT IN QUEBEC MANUFACTURING
CHANGES BY INDUSTRY, 1987-1988

SOURCE: STATISTICS CANADA.

1988. According to the Labour Force Survey (LFS), more than 50,000 new jobs, a record high, were created in the Quebec manufacturing sector in 1988. On average, the number of persons employed in the Quebec manufacturing sector reached a record 612,000 in 1988, 9.5% more than last year. The previous high had been set in 1980, with 620,000 manufacturing jobs. This performance was all the more remarkable since it meant that the Quebec manufacturing sector accounted for more than 60% of the 83,000 new jobs created in Quebec in 1988. In the other regions of Canada, growth in manufacturing employment was no more than 2.3%, so Quebec's share of Canadian manufacturing employment rose to 29.1% in 1988 from 27.7% in 1987. In 1988, few manufacturing industries lost jobs in Quebec. With the exception of manufacturers of textiles (-18.8%), electrical products (-13.3%), non-metallic mineral products (-17.7%) and printing (-2.3%), all other industries contributed to employment growth in 1988. Those recording the most significant gains included the plastics (+36.8%), clothing (+20.6%), wood (+19.4%), primary metals (+12.5%) and transportation equipment (+35.3%) industries.

The dynamic performance of the Quebec manufacturing sector was also reflected remarkably in investment in 1988. Quebec manufacturers increased their new capital expenditure to a record of almost $5 billion in 1988, more than 27% above last year's level. Of this amount, $4.1 billion went for the purchase of machinery and tools and $950 million for the construction of buildings. It is noteworthy that the growth in manufacturing investment was attributable to the contribution of a larger number of industries, led by primary metals, transportation equipment and wood. In the case of primary metals, the construction of a magnesium extraction plant by Norsk Hydro in Bécancour ($500 million) and the speeding-up of construction on Alcan's aluminum smelter at Laterrière on the Saguenay ($750 million) were the main growth factors. In all, capital investment by Quebec's primary metal processing firms stood at $815.8 million in 1988, $327 million higher than the previous year. This performance meant the primary metals sector moved much closer to the first place occupied by pulp and paper as Quebec's largest investor in manufacturing. The sound investment performance of the transportation equipment industry was largely based on the construction of Hyundai's automobile assembly plant in Bromont ($350 million) and the modernization of GM's plant in Boisbriand ($450 million). Overall, transportation equipment manufacturers spent $483 million in 1988 on new capital investment, 76% more than last year. As for the wood industry, the construction of two waferboard plants, one by Lanofor in St. Michel des Saints ($63 million) and the other by Normick Perron in Chambord ($58 million), raised the level of new capital investment by Quebec manufacturers to a record $187.7 million in 1988, a huge 128.1% more than last year. Indeed, this was the strongest leap in investment of any industrial sector.

Table 7

MANUFACTURING CAPITAL EXPENDITURE IN QUEBEC
major industrial groups

Group	1986	$ million 1987	1988	% change 1987/86	1988/87
Primary metals	577	489	816	-15,3	67,0
Paper and allied products	1 023	1 104	1 089	7,9	-1,3
Food and beverages	202	245	346	21,2	41,1
Chemicals	402	365	418	-9,2	14,6
Transportation equipment	137	275	483	99,9	75,9
Textiles	78	86	103	10,4	19,7
Printing, publishing and allied industries	90	68	87	-23,8	27,0
Other	1 204	1 282	1 635	6,5	27,5
TOTAL	3 713	3 914	4 977	5,4	27,1

Source: Statistics Canada.

Other industries also substantially increased their capital expenditure in 1988, among them machinery (+$82 million or 88%), non-metallic mineral products (+$50 million or 62.8%), food and beverages (+$100 million or 41.1%) and electrical products (+$36.1 million or 22.8%). The expansion of IBM Canada's integrated circuit plant in Bromont was one of the main investment projects carried out in the electrical products industry in 1988. After four straight years of strong growth, investment by Quebec's pulp and paper manufacturers fell back slightly in 1988, by 1.3%. None the less, the pulp and paper sector remained Quebec's largest manufacturing investor in 1988, with total capital expenditure of $1.1 billion, representing more than one-fifth of all capital investment in Quebec's manufacturing sector. Among the other industries, lower levels of capital investment were recorded, in particular by the petroleum (-7.3%), furniture and fixtures (-27.5%) and clothing (-13.7%) industries.

Consumer goods industries

Food and beverages

The Quebec food and beverages industry, which has the province's highest output, underwent a period of stagnation in 1988. Faced with a mature market and weak exports, the value of shipments of food products remained virtually unchanged since last year. In real terms, industry shipments showed negative growth in 1988, given the 3.8% increase in industrial selling prices for its products. Across Canada, the value of food and beverages industry shipments rose by 3.3% in 1988, so Quebec's share of national shipments fell slightly, from 24.6% in 1987 to 24.0% in 1988.

Quebec manufacturers' output received little encouragement from domestic demand for food products. Retail sales in food stores, grocery stores and butcher shops rose only slightly in Quebec, from $10.3 billion in 1987 to $10.7 billion in 1988. Moreover, export demand, which absorbs approximately one-quarter of the Quebec food and beverages industry's output, flagged during the year. Indeed, exports of fresh, chilled and frozen meat and dairy products, the two main export products, totalled $347.4 million and $87.5 million respectively, 10.2% and 16.0% lower than the previous year. In the case of dairy products, heavy world competition, translating into high milk powder stocks in most producing countries, worked against Quebec producers in 1988. Other less valuable food products also recorded lower exports, among them vegetables, sugar, molasses and syrups.

The slow growth in the food and beverages industry in 1988, combined with the continued streamlining and concentration work that has been in progress for several years, inevitably had a negative impact on the labour force. In all, the number of employees in Quebec food and beverage processing firms fell by some 10% during the year to 52,000. Several major food companies closed down during this period.

- Hygrade terminated processing activities at its in Montreal plant, laying off 245 people. This decision was made as a result of the changes in eating habits observed in North America over the past few years, which are reflected in lower consumption of meat and its by-products, especially sausages.

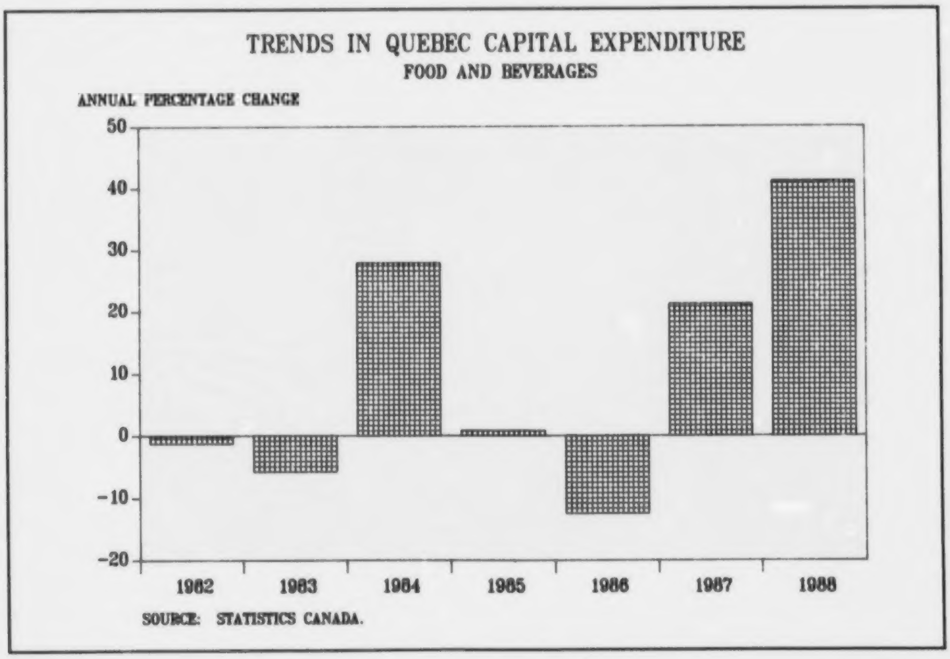
- The George Weston Company announced the sale of its cracker and candy division to Culinar and Nabisco Brands. This deal meant the closure of most of Weston's Longueuil plant and the lay-off of 300 employees.

- The Purdel agri-food cooperative announced that part of its seafood processing activities would cease at its plant in Rivière au Renard, in the Gaspé. This decision, prompted by supply problems and markets that have apparently run out of steam, led to some 230 lay- offs.

- Hershey Canada's chocolate division announced that Lowney's Sherbrooke plant would be closing for good in September 1989. Production will gradually be transferred to its Smiths Falls, Ontario, plant from February 1989 onward. The plant's 355 employees will also be gradually laid off from that date.

Business investment by the food and beverages industry was up substantially in 1988 to a new record of $346.1 million, more than 40% higher than last year. The largest increases were seen in the dairy industry (+$46.1 million), biscuits and bakery products (+$16.1 million) and beverages (+$34.8 million). The food and beverages industry (including tobacco) spends only $16 million on research and development activities. Indeed, this figure has remained quite steady since the early 1980s. In Canada as a whole, firms in

Graph 15



SOURCE: STATISTICS CANADA.

this sector which conduct R&D work spend only 0.4% of the value of their sales on such activities. The 42-Quebec firms in this sector with R&D activities employ slightly over 300 researchers, of whom some 40% are professionals.

Tobacco industry

The activities of the Canadian tobacco industry continued to decline in 1988. Feeling the impact of reduced tobacco consumption, following the rapid drop in the number of smokers and the substantial federal and provincial tax increases on tobacco products over the past few years, Canadian manufacturers were forced to step down production in 1988. This decline is likely to accelerate if the draft legislation passed in Ottawa during the year, including Bill C-51 banning the advertising and promotion of tobacco and Bill C-204 governing the use of tobacco in the federal workplace (including banks and all public transit vehicles), receives royal assent. In all, the tobacco industry, whose production potential lies entirely in Quebec and Ontario, produced 53.8 billion cigarettes in 1988, compared with 54.0 billion in 1987.

Quebec producers, basically consisting of three major cigarette companies, Rothman's Benson and Hedges, Imperial Tobacco and R.J.R. MacDonald, posted poor performances in 1988. Taking into account the 3.9% increase in industrial selling prices for tobacco products during the year, their shipments showed negative real growth (-3.8%) in 1988. Since a similar situation was seen in Ontario, where the remainder of Canadian output is focused, Quebec's share of Canadian shipments of tobacco products remained virtually unchanged at 55% in 1988.

In the face of the continued drop in consumption of tobacco products, a number of manufacturers announced plans for streamlining their activities. In particular, Imperial Tobacco, Canada's largest manufacturer of tobacco products, announced the lay-off of some 50 employees at its Montreal head office, representing about 10% of its head office staff.

The Quebec tobacco industry's investment performance was more encouraging. Accounting for some 80% of all Canadian capital investment, Quebec's tobacco producers invested $38 million in 1988, compared with $29.9 million last year, primarily in the purchase of machinery and equipment.

Leather industry

The leather and allied products industry, some 70% of whose output is produced by the footwear sector, faced major difficulties in 1988, due particularly to stagnating demand. Two years after the removal of quotas on men's and boy's footwear, Canadian manufacturers' market share continued to shrink constantly, in favour of imported products, largely from the Far East (Taiwan, South Korea, Hong Kong and China). In fact, the share of foreign products on the domestic market grew to more than 70% in 1988, forcing local producers to reduce their output considerably. Note that in 1985, before the removal of import quotas on men's footwear, Canadian manufacturers' share was almost 40%. The situation is not likely to improve with the removal of quotas on footwear for women and girls in November 1988. From that time on, there will no longer be any import quotas whatsoever on footwear. In all, Canadian footwear production fell by more than 12.5% to 33.9 million pairs in 1988 from 38.8 million pairs in 1987.

Stagnant demand also affected imports. For the first time in recent years, imports were down slightly this year. Hampered by weak growth in retail sales, reflecting a certain degree of market saturation, and by the depreciation of the Canadian dollar against the Italian, French and Spanish currencies, leading to a drop in imports of European footwear, which became more expensive, total imports fell by 7.9% (3.8 million pairs in 1988 [six months]).

Compounding these problems were substantial increases in the world price of leather, which, reaching record levels during the year, reduced Canadian manufacturers' profit margins. Indeed, prices for leather pelts in North America surpassed all previous highs. This price explosion was largely due to the decline in the slaughter of livestock as a result of falling consumption of red meat, and to growing demand from furniture and automobile manufacturers for this product, which is increasingly used as upholstery for armchairs and luxury car seats.

Considering the 6.4% increase in selling prices for its products, the real growth in Quebec leather product manufacturers' shipments (including tannery products, purses and gloves, as well as footwear) was negative (-2.3%) in 1988. Since the situation worsened even further elsewhere in Canada, Quebec's share of Canadian shipments of leather products rose to 37.6% in 1988 from 35.2% in 1987. This is primarily due to the fact that the decline to date has largely been felt in the production of mens' and boys' footwear, which is located mainly in Ontario. Since the sector continued to feel the impact of the complete removal of quotas on footwear imports, Ontario manufacturers' market share fell even farther.

Investment by Quebec's leather manufacturers fell in 1988. A total of $3.4 million was spent on equipment modernization, almost 10% less than last year. Partly accounting for this were the anxiety elicited by the complete removal of import quotas and the small size of Quebec firms, making access more difficult to the more sophisticated equipment that is needed if the growing competition is to be met.

Another feature of 1988 was the inauguration of a high technology centre in Quebec City by the Footwear and Leather Institute of Canada. Jointly financed by the federal government and industry, this centre will conduct research sponsored by member firms, notably into computer-assisted design and manufacturing.

Furniture and fixture industry

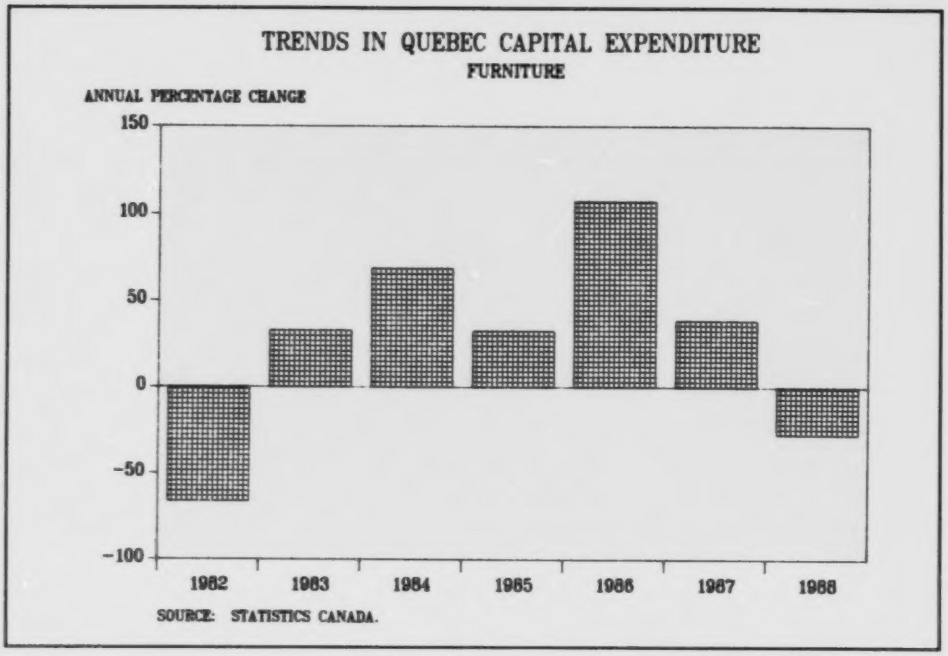
Quebec's furniture industry, including home and office furniture and fixtures, showed signs of running out of steam in 1988. Hit by the slowdown in residential construction in Quebec, weak foreign demand and the lull in the home resale market, activity shrank somewhat during the year. None the less, having benefitted from strong sales in furniture stores, which went from $620 million in 1987 to $680 million in 1988, since some of the numerous new owners of homes built in 1987 had to furnish their properties this year, the Quebec furniture industry continued to grow in 1988, albeit at a more moderate pace. Quebec's furniture manufacturers made shipments worth $1.3 billion in 1988, 6.3% more than last year. Given the 4.0% increase in industrial selling prices for its products, the industry's real growth in 1988 was 2.3%. Note that in 1987, thanks to a flourishing export market, Quebec's furniture industry had increased its shipments by more than 10% in real terms. The industry's declining strength, which is more marked in Quebec than elsewhere in Canada, led to a slight drop in the province's share in the value of Canadian shipments from 30.2% in 1987 to 29.8% in 1988.

External markets, primarily Ontario and the United States, are an essential component for the industry, as they absorb more than 65% of its shipments; but these markets do not seem to have been as dynamic in 1988. Indeed, exports of furniture and fixtures loaded in Quebec totalled $235.8 million in 1988, slightly less than the previous year. The higher value of the Canadian dollar against its U.S. counterpart, making Quebec products less attractive for U.S. wholesalers, was the main obstacle during the year. None the less, with the quality and originality of Quebec products, the establishment of enhanced marketing services, new R&D activity and the industry's major reorientation in terms of design in order to better meet the expectations of international markets, Quebec should acquit itself quite well on the furniture export front. The future seems especially bright for office furniture.

The appreciation of the Canadian dollar also affected industry profits in 1988. Being paid in U.S. dollars for their sales in the United States, Quebec manufacturers saw their profit margins shrink somewhat due to the higher Canadian dollar. Compounding this was the higher price of rough timber. So, after posting an increase of approximately 30% in 1987, the basic profits of corporations with assets of more than $10 million rose by only 2.4% in 1988 to $85 million.

Reflecting slower output growth, lower profits and the streamlining of activities through mergers and acquisitions, the number of persons employed in furniture manufacturing firms in Quebec remained virtually unchanged at 27,000 in 1988. Computerization and increased mechanization of production also had negative impact on the level of employment during the year. Several firms closed their doors in 1988, among them Shermag in Thurso, specializing in solid maple furniture for the Canadian market, which laid off 80 employees, and All-Steel Canada Ltd., a metal office furniture manufacturer in St. Laurent, which announced the closure of its plant, with a loss of 300 jobs.

Graph 16



SOURCE: STATISTICS CANADA.

Modernization work, acquisition of new production facilities and the advent of new products requiring substantial technological change encouraged investment in 1988. But, as the firms are small, often family-owned and with little capital (especially in the case of home furniture companies), most such investment was made by a small number of manufacturers. In all, Quebec furniture manufacturers spent $26.4 million in capital investment in 1988 compared with an average of $13.7 million over the past 10 years.

Clothing industry

Quebec's clothing industry performed weakly in 1988. Hit by slower sales in clothing stores and by heavy competition from abroad, the value of shipments by Quebec clothing manufacturers rose by a mere 0.3% in real terms from last year's level. Since a similar performance was recorded across Canada, Quebec's share of Canadian shipments remained virtually unchanged at 61% in 1988. Note that of all industries, Quebec holds the lion's share of Canadian shipments in this industry, whose activities are largely based in Montreal.

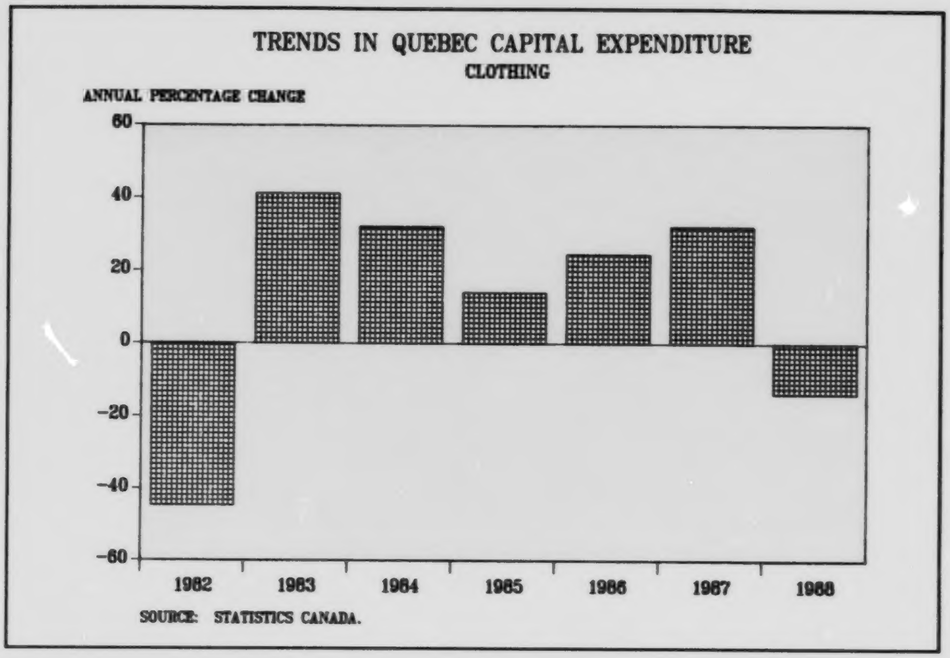
While clothing manufacturers enjoy a high level of tariff and non-tariff protection, imports continued to be a problem in this sector in 1988. Following a lull in 1987, the rate of growth of clothing clearing customs in Quebec, originating primarily in the Far East, was once again higher than that of domestic demand in 1988. This growing penetration of foreign products into the local market, which gouged away a further share of the market held by Quebec producers, occurred despite the renewal of the Multifibre Arrangement in 1986, intended to protect the industry by limiting import growth to the rate of increase in demand.

The activities of the clothing industry were profitable in 1988, none the less. The base profits of Canadian corporations with assets of more than $10 million rose by 19.8% to $123 million during the year.

Despite the reduced activity, the Quebec clothing industry, the largest employer in the province's manufacturing sector, substantially increased its work force in 1988. Quite surprisingly, the number of persons employed hit a high of 82,000 during the year according to the Labour Force Survey (LFS), almost 14,000 more than last year. But this strong growth, while allowing Quebec to increase its share of Canadian employment to 65.6%, was not sufficient to prevent the closure of a number of outdated plants. A case in point was Canadelle Inc. which, as part of a program to modernize and streamline its activities, announced the closure of its Wonderbra sewing factory in Quebec City and the lay-off of 120 employees.

Stagnating domestic demand did nothing to encourage investment in 1988. Quebec clothing manufacturers invested a total of $22 million during the year, 13.7% less than in 1987. The drop in capital expenditure was primarily attributable to men's clothing (-2.4 million or -14.5%), women's clothing (-1.8 million or -35.2%) and children's clothing (-1.8 million or

Graph 17



-74.9%). Notable among major investment projects, however, is the construction of a $10 million factory in eastern Montreal by Peerless Clothing, specializing in men's suits and trousers.

Another feature of 1988 was the inauguration of the first Salon Prêt-à-porter (Ready-to-Wear Salon) in Montreal. Strictly reserved for members of the fashion world (manufacturers, creators, importers and buyers), the Salon offered visitors a range of more than 200 exhibitors in the areas of ready-to-wear clothing, leather, jeans, lingerie, hats and other clothing accessories. This first edition, organized by Montreal promoters, was an excellent initiative toward making Montreal a major international fashion centre.

Table 8

CONSUMER GOODS INDUSTRIES
shipments, employment and capital expenditure

Group	Shipments ($ million) 1987	Shipments ($ million) 1988	Employment ('000) 1987	Employment ('000) 1988	Capital expenditure ($ million) 1987	Capital expenditure ($ million) 1988
Food and beverages	10 460	10 580	56	52	245	346
Tobacco	1 005	1 006	4	4	30	38
Leather	477	497	7	12	4	3
Clothing	3 839	3 967	68	82	26	22
Furniture	1 205	1 281	26	27	36	26
Miscellaneous industries	N.A.	N.A.	16	27	457	541

Source: Statistics Canada.

Resource processing industries

Wood industries

For Quebec's wood industries, including timber, veneers and plywood, 1988 was a difficult year. Hit by the slowdown in housing starts throughout North America, new stumpage fees in Quebec and the maintenance of an 8% tax on lumber exports to the U.S. by way of countervailing duties, several wood manufacturers experienced lower profits in 1988. Note that the Quebec government increased stumpage fees and other duties by an amount equivalent to 9% of othe tax imposed by Washington. Compounding these factors was the appreciation of the Canadian dollar against the U.S. currency, which also worked against the industry during the year. Indeed, being paid in U.S. dollars for their sales in the United States, Quebec producers received fewer Canadian dollars, with the result that their profit margin declined even further.

Reflecting the industry's weak performance, the value of shipments from Quebec manufacturers fell back slightly from its 1987 level to $3.3 billion. Taking into account the 2.2% increase in selling prices for the industry's products, this represents a decrease of approximately 3.4% in real terms. Since the situation was similar elsewhere in Canada, Quebec's share of

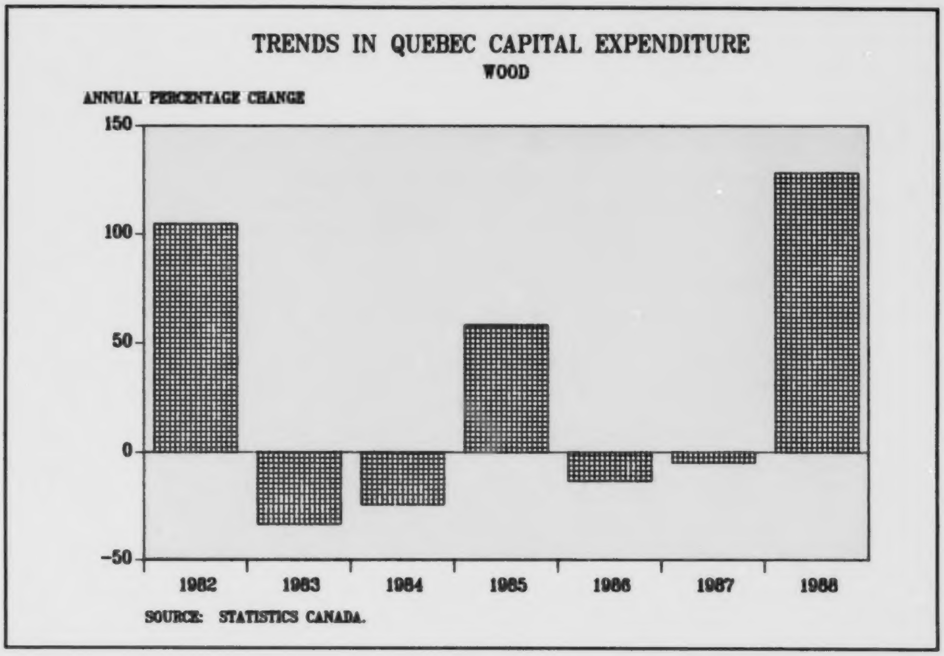
Canadian shipments remained virtually unchanged at 22.0% in 1988. Note that Quebec is Canada's second producer and exporter of lumber, after British Columbia.

The industry's inability to increase its sales on outside markets contributed to its weaker position in 1988. Note that only 20% of Quebec's output is sold in the province. Following last year's example, exports of wood to the United States, an essential market for the industry as it absorbs close to one-half of local production, showed weakness in 1988. The smaller number of housing starts in Canada and the maintenance of the surtax on Canadian lumber exports to the U.S. were the main obstacles. This was somewhat offset, however, by an increase in overseas sales, especially to Japan and the United Kingdom. Indeed, while they account for a mere 5% of provincial output, sales of Quebec sawmill lumber outside North America continued to grow in 1988. This is due to the enhanced competitive position of Quebec manufacturers following the depreciation of the Canadian dollar against European and Japanese currencies and the numerous initiatives taken by the industry to make a name for itself on international markets.

Rather surprisingly, the industry's performance was the most dynamic in the area of job creation. According to the Labour Force Survey (LFS), despite flagging demand for wood in Quebec and elsewhere in North America, the number of persons employed by Quebec wood producers rose by almost 20% to 37,000 in 1988.

The need for manufacturers to acquire new plant and modernize equipment to become more competitive encou-

Graph 18



SOURCE: STATISTICS CANADA.

raged investment in 1988. Boosted by the construction of two waferboard plants, one by Lanofor in St. Michel des Saints ($63 million) and the other in Chambord by Normick Perron ($58 million), capital expenditure by Quebec wood producers reached a record $187.7 million in 1988, a leap of some 130% above last year's level. Indeed, wood industries posted the highest increase in investment of any industrial sector.

Paper and allied products indstries

Quebec's pulp and paper industry continued to thrive in 1988, with world demand for paper remaining high and pulp and newsprint prices rising. This favourable situation, which led to record sales, meant that most mills in Quebec operated to capacity. Although the appreciation of the Canadian dollar against the U.S. currency considerably reduced the profit margins of local paper mills from exports to the United States, these mills posted record profits in 1988. Base profits of Canadian pulp and paper companies hit a historical high of $5.6 billion in 1988, 19.6% more than last year.

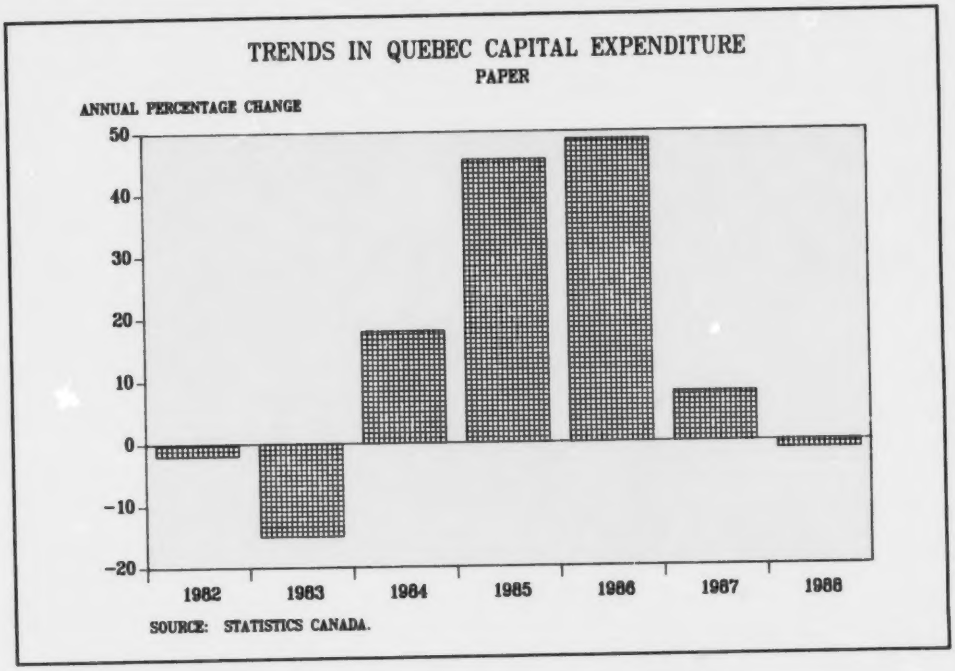
Benefitting from the growing consumption of paper in the United States, Europe and Japan, the value of shipments from Quebec's pulp and paper industry rose by 9.4% in 1988 to a high of $8.4 billion. As the situation was similar elsewhere in Canada, Quebec's share of Canadian pulp and paper shipments remained virtually unchanged in 1988 at 33%.

Foreign demand, a major component in the industry absorbing more than 50% of its output, continued to favour the expansion of Quebec paper mills in 1988. Indeed, propelled by the growing consumption of paper in the United States and the other major industrialized economies, export sales posted rapid growth during the year. While newsprint exports, accounting for more than one-half of the Quebec industry's shipments, increased by 16% to $3.5 billion, the value of wood pulp and similar pulp exports rose by 31.5% to $696 million in 1988 from $529.4 million in 1987. As in the previous year, overseas sales increased the most. In all, overseas sales, while accounting for only about 18% of total exports, went from $548 million in 1987 to $764 million in 1988. This was primarily due to the marked improvement in the competitive position of Quebec's paper mills following the depreciation of the Canadian dollar against the European currencies and the Japanese yen.

The booming activity in Quebec's paper mills in 1988 was accompanied by marked employment growth. According to the Labour Force Survey (LFS), the number of persons employed in the Quebec pulp and paper industry rose to an average of 45,000 during the year, 9.8% higher than in 1987. This good performance meant that Quebec's share of Canadian employment moved up to 34.1% in 1988.

After four straight years of strong growth, investment by Quebec's pulp and paper producers fell slightly in 1988, by 1.3%. The completion of modernization work on a number of large mills, in particular Cascades in Port Cartier, Abitibi-Price in Alma and Consolidated Bathurst in Shawinigan, was behind this decrease. None the less, the pulp and paper sector was still the largest investor in manufacturing in Quebec in 1988, with capital expenditure totalling $1.1 billion, more than one-fifth of all capital investment in Quebec's manufacturing sector. Among the main investment projects in 1988 were the continuation by Domtar of construction work on a fine paper plant at Windsor in the Eastern Townships ($800 million), the establishment by Tembec of a cardboard plant in Temiscaming ($270 million) and by Quebec and Ontario Paper of a thermo-mechanical pulp mill in Baie Comeau ($130 million), the expansion by Reed of its Quebec City paper mill ($125 million) and by Maclaren of its Kraft pulp mill in Thurso ($170 million), the modernization of Kruger's mill in Trois Rivières ($400 million) and Consolidated Bathurst's mill in Grand Mère ($280 million), and the construction of a bleached chemical thermo-mechanical pulp mill by Donohue/Rexfor in Matane ($300 million).

Graph 19



SOURCE: STATISTICS CANADA.

In 1986 in Quebec, a total of $48 million was spent on research and development in the wood-based industries (forestry services, sawmill products, wooden doors and windows and, most importantly, pulp and paper), placing this industry fourth in order of R&D spending in the province. This spending rose at an annual rate of 5% in real terms during the period from 1981 to 1986. In Quebec, this expenditure was made by 14 firms. Some 650 people are employed in research activities in this industry. It should, however, be noted that industrial R&D activity varies considerably according to the industrial sector involved.

Thus, R&D spending on forest management in Quebec totals approximately $20 million a year. The two levels of government provide almost all the funding (95%), and 80% of the work is carried out in government laboratories (most of this expenditure is not included in the $48 million mentioned above). The rest of the work is conducted in universities (primarily Laval and the University of Quebec) and by industry. In the logging sector, most industrial R&D work is financed by the private sector and carried out by the Forest Engineering Research Institute of Canada (FERIC), Quebec's industrial research centre (CRIQ), the equipment manufacturers themselves, and Laval University. Some $7 million's worth of R&D per year is conducted in this sector. The sawmill and wood panel sector spends approximately $4 million a year on R&D. These costs are shared between the two levels of government and industry. Finally, R&D expenditure in the Quebec pulp and paper industry, amounting to about $32 million a year, is made by the Canadian Pulp and Paper Research Institute, McGill University, the University of Quebec at Trois Rivières and the Ecole Polytechnique, and by the companies themselves. Of research in this sector, 85% is financed by the private sector. Across Canada, those firms making R&D expenditures devote 0.3% of the value of their sales to this type of activity.

Non-metallic mineral products

Having taken advantage of last year's construction boom to substantially increase its output, Quebec's non-metallic mineral products industry considerably reduced its activity in 1988. Hit by the slowdown in construction, especially in housing starts, the total value of its shipments remained virtually unchanged since 1987. Taking into account the 3.9% increase in selling prices for the industry's products, shipments by Quebec manufacturers actually sustained negative growth in 1988.

The clay products and cement sectors were especially hard hit in 1988, with shipments down by 31.8% and 10.1% respectively. The decline in shipments of clay products reflects the slowdown in housing starts, which translated into weaker demand for bricks. In addition, the closure of Miron's cement plant in Montreal's St. Michel neighbourhood in October 1987 contributed substantially to the decline in cement production in 1988. Note that Miron, with approximately 20% of the market, is Quebec's third cement manufacturer behind St. Lawrence Cement, with some 40% of the market, and Canada Cement Lafarge, with a share of about 25%. But the best results were recorded in crushed stone and granite. Indeed, while shipments of crushed stone were up by 7.7% in 1988, demand for granite continued to rise substantially during the year, due to growing interest from builders, who use granite for facing (particularly for the new office towers in downtown Montreal).

The slowdown in activity in Quebec's non-metallic mineral products industry was especially evident in employment. According to the Labour Force Survey (LFS), the number of persons employed fell by a substantial 17.6% from approximately 17,000 in 1987 to 14,000 in 1988. Of all manufacturing industries, only the textile industry, with 18.8% fewer employees during the year, recorded job losses great than this.

The industry put in its most dynamic performance in the area of investment, with numerous plant establishment and modernization projects taking shape or announced in 1988. Among the main investment projects are the establishment by Miron of a cement works and quarry ($100 million) at Grondines, in Portneuf County, and the construction by the Belgian firm Glaverbel of a plate glass manufacturing plant ($140 million) in the St. Augustin de Desmaures industrial park near Quebec City. Glaverbel's factory, whose output will be destined primarily for car windscreens, mirrors and table tops, should provide permanent employment for approximately 300 people. In all, capital investment by Quebec manufacturers of non-metallic mineral products rose by more than 60% to a record $128.3 million in 1988.

In Quebec, eight firms in this industry conduct research and development work worth $2 million. Unlike R&D spending in other industries, a substantial proportion (45%) of R&D expenditure in the non-metallic mineral products industry is devoted to capital investment, with the balance consisting of running expenses. Across Canada, those firms conducting R&D in this field spend 0.5% of the value of their sales on research and development work. In Quebec, approximately 40 people, more than half of them professionals, are assigned to R&D activity in this industry. The main company conducting research work in this field is Canada Cement Lafarge (development of hydraulic binders, new concrete products, new cements and higher-performance production equipment).

Primary metal industries

Quebec's primary metal industries, with 60% of their output coming from smelting and refining of non-ferrous metals, had a particularly flourishing year in 1988. Stimulated by the prosperity of economies worldwide, reflected in an exceptionally strong metals market and substantial price rises, especially in aluminum, manufacturers of primary metals in Quebec significantly increased their sales and posted record profits in 1988. In all, the value of industry shipments reached a high of $7.1 billion in 1988, 17.5% more than last year. This strong growth meant that Quebec increased its share of Canadian shipments of primary metals from 32.1% in 1987 to 32.9% in 1988.

The aluminum sector, which is gaining an increasingly high profile in the field of transportation, particularly in the automobile and aerospace industries, had a prosperous year in 1988. Due to heavy demand on world markets, the low level of producers' stocks and the fact that the industry is practically operating to capacity, spot prices for aluminum climbed to very high levels during the year, allowing aluminum producers to make record profits in 1988. Note that aluminum prices went from US$0.60 a pound in early 1987 to more than US$1.00 a pound on average in 1988. In this respect, Alcan, a world leader in the aluminum industry, more than doubled its net profit during the fiscal year ending December 31, 1988. During this period, Alcan, which also benefitted from the tightening of its operating costs, realized a record net profit of $931 million, compared with $433 million for the corresponding period in 1987.

Benefitting from favourable conditions in this sector, exports of aluminum loaded in Quebec leaped up by close to 50% in 1988, to $2.8 billion. This strong advance was primarily due to the vigorous U.S. and Japanese economies. It should be remembered that Quebec is the world's largest exporter of aluminum.

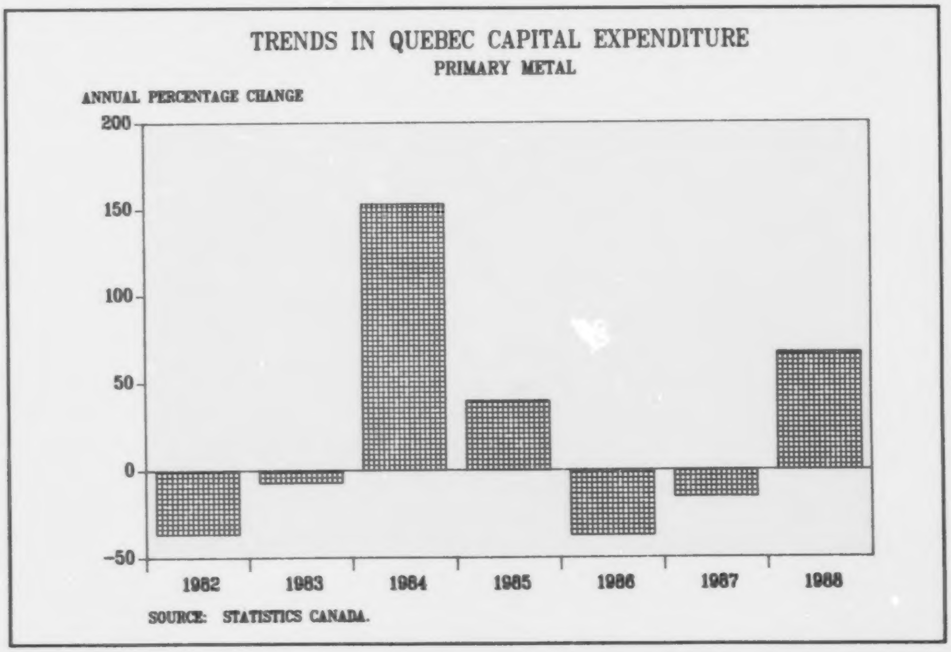
The profitability of activities and increased utilization of production capacity encouraged investment in 1988. Indeed, a large number of plant expansion, modernization and establishment projects were completed in the primary metal industries in Quebec during the year. The construction of a magnesium extraction plant in Bécancour by Norsk Hydro ($500 million) and the bringing forward of Alcan's project to construct an aluminum smelter at Laterrière on the Saguenay ($750 million) were the main growth factors in 1988. Production at the Norsk Hydro plant should begin in June 1989; it is expected that one-half of the magnesium produced at Bécancour will be used for alloys by aluminum smelters and that the other half will be used in the manufacture of automobile parts and in cast iron and steel processing. Growth in the use of magnesium is primarily anticipated in the automobile industry. Many automobile manufacturers are interested in the fact that magnesium is extremely strong even though it weighs considerably less than aluminum.

Citing extremely attractive prices for aluminum and the exceptionally strong market, Alcan decided to advance the schedule for its aluminum smelter in Laterrière. So the first phase will start production in December 1989, while the fourth and final phase will be completed in late 1992. The new production capacity will enable the corporation to gradually replace its old Arvida plants.

Work was also being carried out on other major investment projects in 1988, among them the modernization of Canadian Electrolytic Zinc's zinc refinery in Valleyfield ($140 million) and the establishment in Beauport of a metal silicon plant by the Spanish firm Etcheverria Hermanos and the Société générale de financement (SGF) ($75 million). Note that metal silicon is an important component in conductors and semi-conductors found in the electronics industry.

In all, capital expenditure by Quebec primary metal industry firms reached $815.8 million in 1988, $320

Graph 20



million more than the previous year. This remarkable performance brought the primary metal sector considerably closer to the first place held by the pulp and paper industry as Quebec's largest investor in manufacturing. Investment prospects look just as healthy in 1989, especially with the confirmation of construction of a third series of electrolytic tanks ($550 million) at the Bécancour plant by the Aluminerie de Bécancour Inc. (ABI) group. With this addition, ABI (a consortium comprising Pechiney Reynolds (50.1%), Alumax (24.95%) and Albecour (24.95%), a subsidiary of SGF) will position itself as one of the largest primary aluminum production plants in the world, with a production capacity of 360,000 tonnes per year. This investment should create some 200 permanent jobs. Noranda Minerals also announced investment of $46 million over the next five years to modernize its copper refining plant in east-end Montreal, one of the world's largest plants in this sector.

The strong activity in primary metals was also reflected in substantial employment growth in 1988. According to the Labour Force Survey (LFS), the number of persons employed in the industry rose by some 4,000 in Quebec to 36,000, 12.5% higher than last year.

In Quebec, four firms in the ferrous primary metals sector and five firms in the non-ferrous primary metals sector conduct industrial research and development work worth $31 million (1986). Note that this figure was considerably lower than for the two previous years ($41 million in 1985 and $38 million in 1984). Across Canada, the ratio of R&D expenditure to sales of companies which carry out R&D varies according to whether the firm is in the ferrous (0.4%) or non-ferrous metals sector (1.3%). The main Quebec firms performing R&D work in semi-processed metals are Alcan (enhancement of aluminum production and lamination processes), Noranda (casting and metalwork processes, extractive metallurgy of non-ferrous metals) and Quebec Metal Powders (development of new grades of iron powder and new applications for such powder). Quebec's primary metal industries employed 436 researchers in 1986.

Petroleum and coal products

After making a partial recovery last year from the collapse of world oil prices in 1986, Canada's petroleum and coal products industry experienced some difficulties in 1988. While output continued to fall due to a decline in consumption (since 1987, oil has been overtaken by electricity as Quebec's prime energy source), international oil prices fluctuated downward during the year. Because of this, the profitability of most firms deteriorated, as can be seen from the base profits of Canadian companies with assets of more than $10 million, which fell by 8.6% in 1988.

In Quebec, where the refining capacity is shared by Shell and Petro-Canada in Montreal East and Ultramar at St. Romuald, the 5.8% increase in sales at service stations did little to help the Quebec industry. Note that gasoline accounts for some 60% of oil energy products sold in Quebec. Under pressure from weak world prices for oil, the value of shipments from Quebec refining companies fell by 16.7% in 1988. As a similar situation was observed in Canada as a whole, Quebec's share of Canadian output remained virtually unchanged at 21.9%.

Despite the major restructuring of refining activity in Quebec since the early 1980s, characterized by the closure of four refineries (British Petroleum, Texaco, Esso and Gulf Canada), investment in refining remained substantial in 1988. Stimulated by refinery modernization and expansion by Shell in Montreal East ($80 million) and Ultramar in St. Romuald ($85 million), capital expenditure on refining in Quebec reached $111.5 million in 1988, slightly lower (-7.3%) than in 1987. This figure is still a far cry from the record $220.7 million recorded in 1982.

Quebec's petrochemical industry performed very strongly in 1988. Thanks to the completion of its modernization and restructuring program and the change in use of Petromont's plant in Montreal East, enabling it to substantially increase production, the industry was in a position to improve its profitability and develop new markets. Reflecting the recovery in its activities, numerous investment projects were announced during the year, notably by Kemtec (former Gulf Canada facilities purchased by Lavalin), which began construction on a plant in Montreal East to produce cumene and proxylene ($120 million). Himont Canada also announced the establishment of a plant to produce polypropylene-based compounds and alloys in Varennes ($20 million). This production unit will be a major draw for the establishment of new businesses, primarily in the plastics sector. In addition, Petromont is to spend some $60 million over the next year to increase current output by 20-25%.

Although these projects as a whole guarantee the short-term survival of Quebec's petrochemical industry, its long-term growth depends more on the completion of the Soligaz project (Soligaz is a consortium consisting of Soquip, Gaz Métropolitain, SGF, SNC and Alberta Natural Gas). This project involves establishing in Montreal a permanent supply system for liquid natural gas (propane, butane and isobutane) from Alberta. The project, whose cost is estimated at close to $300 million, calls for the adaptation of the existing Sarnia-Montreal oil pipeline or construction of a new pipeline and involves construction of a liquid natural gas splitting plant in eastern Montreal. At present, this liquid arrives already split on tank cars from Sarnia and points west, whence the additional costs of approximately $4-5 a barrel which Quebec industries have to cover. Under the current system of transportation, supplying the liquid is too costly to guarantee the long-term survival of Quebec's petrochemical industry. Now, after more than two years of waiting and uncertainty, the promoters of Soligaz are increasingly optimistic about the chances of this project being carried out.

Table 9

RESOURCE PROCESSING INDUSTRIES
shipments, employment and capital expenditure

Group	Shipments ($ million) 1987	Shipments ($ million) 1988	Employment ('000) 1987	Employment ('000) 1988	Capital expenditure ($ million) 1987	Capital expenditure ($ million) 1988
Wood	3 335	3 295	31	37	82	188
Paper	7 686	8 405	41	45	1 104	1 089
Primary metals	6 071	7 135	32	36	489	816
Non-metallic minerals	1 639	1 680	17	14	79	128
Petroleum	3 653	3 042	4	5	120	112

Source: Statistics Canada.

Capital and industrial goods industries

Plastic products industry

The Canadian plastic products industry, heavily concentrated in Ontario owing to the proximity of the main automobile manufacturers, continued to expand in

1988. Benefitting from the increasing use of plastic in the manufacture of automobiles and its growing penetration of the container industry, the plastic products sector maintained its fast pace during the year. But demand for plastic packaging products, which account for some 30% of industry activity, appears to have flattened out somewhat. This is primarily due to higher prices for plastic, making plastic containers less competitive than glass or cardboard containers, which were already enjoying greater popularity among consumers. During the year, most plastic products manufacturers ran at maximum capacity.

Quebec's plastic products manufacturers, some 70% of whom are concentrated in the Montreal area, also posted good results in 1988. With the creation and use of new plastic products in various forms, from packaging materials to car parts, these manufacturers increased their deliveries by 11% during the year, approximately the same rate of growth as in Canada as a whole. Quebec's share of Canadian shipments of plastic products thus remained unchanged at 24.9% in 1988.

In Quebec, the industry is forging more and more links with car manufacturers, who represent one of the fastest growing markets for plastics. While Camoplast Inc. of Kingsbury won a $5 million contract in 1988 from General Motors to supply plastic components for Chevrolet's Cavalier models, plastic manufacturer IPL Inc. of St. Damien de Bellechasse signed an agreement in principle with Ford and Mazda to produce inner door sections for a new model to replace the Escort. The St. Damien firm has already been working with Ford for some years, and its activity has grown rapidly.

Other efforts have also been made in the development of new markets. IPL also acquired technology from Schoeller International of Munich, Germany, providing it with an exclusive licence to produce plastic handling cases. The firm now has to succeed in bringing the plastic case market within its reach, particularly for Canadian breweries (negotiations are already under way), as this would open up a vast market.

The Quebec industry's strong activity was also reflected in a substantial increase in jobs in 1988. According to the Labour Force Survey (LFS), the number of persons employed in Quebec rose by 36.8% during the year to a high of 26,000. This exceptional performance, combined with slower employment growth among other Canadian manufacturers, meant that Quebec increased its relative share of Canadian employment to 27.1% in 1988 from 24.1% the previous year.

In the knowledge that expansion of the plastic products industry will follow closely on the heels of new technology, Quebec manufacturers continued to invest substantially in 1988. Modernization work, primarily in the acquisition of more sophisticated equipment, translated into capital expenditure of $71.7 million in 1988. While this figure is down 8.3% from 1987, capital investment none the less remains well above the annual average of $40.7 million recorded over the past 10 years. In this wave of investment, Camoplast Inc. of Kingsbury announced the expansion and modernization of its Richmond plant, specializing in the injection-moulding of plastic products ($8.7 million). This project will place the firm in a better position than ever to strengthen its stance in the automobile parts sector, whose future prospects seem very good in Quebec.

Research and development expenditure by the rubber and plastics industry is modest, at $3 million in 1986. A high proportion (93%) of this consists of running expenses, with the remainder allocated to capital investment. In Canada, those rubber and plastics firms which make R&D expenditure spend 0.8% of the value of their sales on R&D. In Quebec, this industry employs 77 researchers, less than 30% of them professionals. The main Quebec companies conducting R&D work in this sector are American Biltrite (Canada) Ltd. (development of new rubber formulas) and IPL (development of plastic products, enhancement of production processes, and evaluation of new resins).

Textile industry

Faced with stagnating demand for its products and growing import penetration, the Quebec textile industry lost way in 1988. Suffering the brunt of the slowdown were firms specializing in the manufacture of consumer goods (sheets, towels, clothing fabric, etc.), while companies producing industrial textiles managed quite well. Soft sales in the clothing sector, one of the textile industry's main downstream clients, meant that clothing manufacturers had high inventories, leaving textile producers fewer takers for their products during the year. Compounding this factor was import growth, which mainly affected consumer products.

Reflecting the weak domestic market, the value of shipments from Quebec textile producers grew by a mere 4.9% to $3.3 billion in 1988. Taking into account the 3.9% rise in industrial selling prices for its products, the industry's real growth barely exceeded 1%, markedly less than last year. As the situation was similar elsewhere in Canada, Quebec's share of Canadian textile shipments remained virtually unchanged at 50.8% in 1988.

This almost stagnant production, combined with the streamlining of industry activity, inevitably had an impact on jobs. A large number of lay-offs took place among textile manufacturers in Quebec in 1988. According to the Labour Force Survey (LFS), the number of persons employed stood at an average of 26,000 in 1988, or close to 6,000 lower than last year. Dominion Textile of Montreal alone laid off some 700 employees during the year in its different plants in Quebec. Of its factories, the worst hit were Drummondville, Sherbrooke and Magog, with 175, 140 and 100 lay-offs respectively. At the same time, the Trois Rivières Wabasso plant, also belonging to Dominion Textile, ceased production of sheets in February 1988, leading to the lay-off of 200 employees. This closure had been planned for November 1987, but under an agreement with the employees, production had been extended for three months. The fact that its market is constantly shrinking in favour of imports from such countries as Hong Kong, Turkey, China and Brazil has considerably hurt Canadian production of sheets, which is heavily concentrated in the Eastern Townships region.

In this context, the federal government had to impose import quotas on sheets from Brazil to prevent that country from flooding the already saturated Canadian market.

The penetration of the Canadian market by foreign products continued to present a problem in 1988. Although imports showed slower growth during the year with the tighter entry controls provided for in bilateral agreements under the Multifibre Arrangement, they none the less continued to capture a growing share of the market, to the detriment of local manufacturers. Wage disparities between Canadian workers and those in textile exporting countries play a prime role in this respect, since this industry is labour-intensive. This major advantage favours the mass entry of foreign products onto Canadian markets.

With the prospect of freer trade and owing to the obsolescence of its equipment, Quebec's textile industry increased its investment in 1988. Modernization work translated into capital expenditure of $103.2 million, almost 20% more than last year. None the less, Quebec accounted for approximately one-third of Canadian investment in textiles, substantially less than its share of production, which stands at more than 50%. Among the main investment projects being carried out are the expansion and modernization of facilities ($13 million) in Acton Vale by Peerless Carpet Corporation, specializing in the manufacture of residential and commercial carpeting, and the modernization of Dominion Textile's denim factory ($34 million) in Drummondville. Hafner Fabrics of Canada, specializing in the manufacture of fabrics for home furnishings and stretch fabrics, also announced investment of $31.4 million to modernize its facilities in Granby.

In 1988 Dominion Textile, the Montreal textile supplier, became North America's largest denim manufacturer (second in the world), and an international leader in fabric for work clothing. In particular, the corporation spent US$90 million to acquire four European subsidiaries of Burlington Industries specializing in Klopman work clothes. Domtex also acquired Wayntex, an American industrial textile manufacturer, for US$130 million. Note that in November 1987, Dominion Textile had purchased Burlington Industries' denim factories in Erwin, North Carolina, for US$205 million.

In Quebec, 14 textile firms were conducting R&D activities worth $11 million in 1986. Approximately 80% of this expenditure was running expenses, with the remainder earmarked for capital investment. R&D spending in this industry rose during the period from 1981 to 1986 to an annual rate of 4% in real terms, a rate similar to the manufacturing sector average. In Canada, those textile industry firms carrying out R&D spend 1% of the value of their sales on such activities. The Quebec textile industry employs 122 people in R&D, 34% of them professionals. Research in this industry is focused primarily on the development of new fabrics and fibres.

Printing, publishing and related industries

Quebec's printing, publishing and related sector had a good year in 1988. Stimulated by the constant growth in print advertising, which appears to be an increasingly popular promotional vehicle compared with television and radio, the industry substantially increased its sales during the year. Most Quebec firms operated at close to maximum capacity throughout the year, and this translated into a marked rise in output. The value of shipments from Quebec printers and publishers climbed by 10.2% in 1988 to a new record of $3.2 billion. As similar growth was observed elsewhere in Canada, Quebec's share of Canadian shipments of printed matter remained quite steady at 26.2% this year.

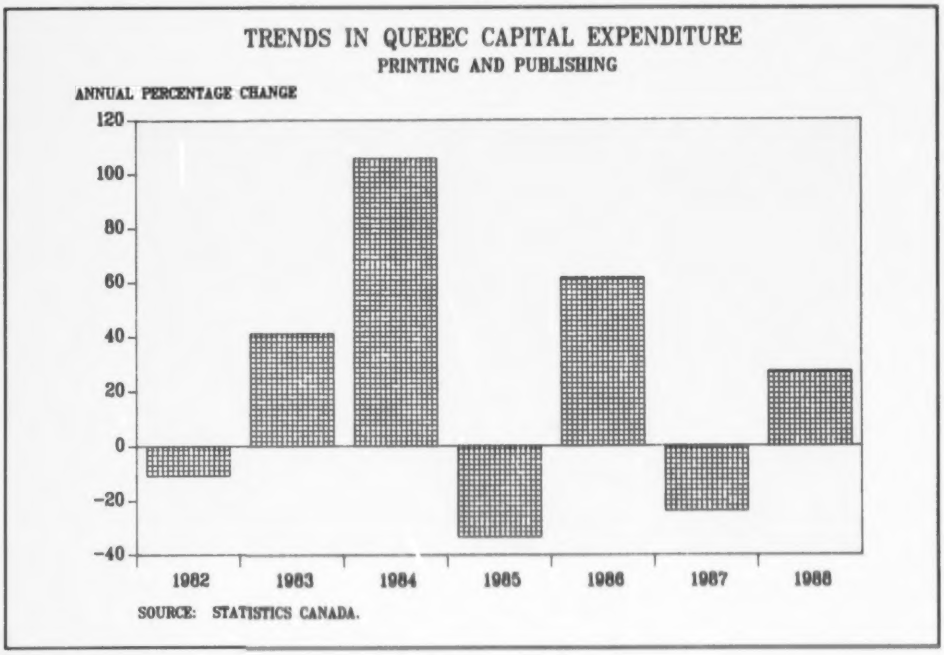
The printing and publishing industry also generated high profits in 1988. Indeed, activities showed greater profitability during the year, as may be seen from the profits of Canadian firms with assets over $10 million, which rose by 23.3% since 1987 to $1.4 billion.

The trend toward concentration continued in the industry in 1988, because equipment is costly and quickly becomes obsolete (with the advent of computers, the life of a press, which could previously have been 20 years or so, is now only 3-5 years). Numerous acquisitions and mergers occurred in 1988, especially by the Québécor group, which also announced the acquisition of a majority holding in BCE Publitech (BCE's printing activities subsidiary), consisting of the 17 printing works of Ronalds Printing and British American Bank Note ($161 million). Interestingly, this deal makes Québécor Canada's largest printer and the second largest in North America, behind the U.S. Donnelly corporation. Québécor also acquired control of Éditions Le Nordais, which publishes Clin d'Oeil, Décoration chez Soi, Sel et Poivre, Hommes, Rénovation Bricolage and Vous et Santé, among others ($15.5 million). This made the Montreal firm the largest publisher of French-language magazines in Canada and one of the largest printing groups in North America.

With this sale, however, Quebec's publishing industry loses one of the last firms to have no ownership link with any of the major corporations, such as Québécor, Transcontinental G.T.C. and Télémédia. Also in this wave of acquisitions, control of Publications Dumont, with 28 weeklies in Quebec, passed to Cogeco for approximately $40 million.

The concentration of companies and the acquisition of higher-performance equipment, with consequently smaller manpower requirements, led to a slight decline in employment in 1988. During the year, the number of persons employed by Quebec's printers and publishers fell to 42,000, about 3% less than in 1987.

Graph 21



SOURCE: STATISTICS CANADA.

Quebec's printing and publishing firms, which must adapt to the many technological changes taking place, made capital expenditure of $86.9 million in 1988, compared with $68.4 million in 1987, primarily to purchase new equipment. The construction of a printing shop by Ronalds Printing (a new subsidiary of Québécor) in Bromont ($20 million) also boosted investment in 1988. This print shop, to specialize in producing telephone directories and department store catalogues, will lead to the creation of some 140 new jobs.

Metal fabricating industries

The performance of Quebec's metal fabricating industries was somewhat weaker in 1988. During the year, Quebec manufacturers were unable to increase their output, despite booming investment in the manufacturing sector, strong growth in commercial construction, major public infrastructure work and the initiation of hydro-electric development projects. Overall, the value of shipments from Quebec's metal fabricating industries remained quite steady at $4.5 billion in 1988. Given the 4.4% rise in the Canadian selling price index for this industry, real growth in Quebec shipments was negative, at about -4%. Quebec's share of Canadian shipments fell to 26.1% in 1988 from 27.4% in 1987.

The profitability of the metal fabricating sectors, which includes the stamped, pressed and coated metal products industry, as well as the fabricated structural metal products and wire products industries, was none the less attractive in 1988. Base profits of Canadian firms with assets over $10 million climbed by some 17% from $717 million in 1987 to $838 million in 1988.

The higher profits enjoyed by metal products manufacturers were accompanied by an increase in investment in 1988. Quebec's metal fabricating industries made record capital expenditure of $124.3 million in 1988, 16.1% more than last year. This performance was all the more encouraging since it meant that the Quebec industry accounted for some 60% of all Canadian investment during the year. Quebec's relative share of Canadian capital expenditure went from 23.2% in 1987 to 25.4% in 1988.

The impact of stagnating output was felt on employment in 1988. An average of 39,000 persons were employed in the industry in Quebec during the year, virtually the same number as in 1987.

Research and development expenditure of $12 million is made by 48 metal fabricating firms in Quebec. Since the early 1980s, R&D spending in this industry has been growing at a high real rate of 13.6% a year (1981-1986). Almost 200 people are assigned to R&D work, 42% of them professionals. The main Quebec metal fabricating firms conducting R&D activities are the Advanced Dynamics Corporation (research on handling systems) and Canam Manac (design of a variable-angle bending machine for round bars). In Canada, those metal fabricating sector companies carrying out R&D work spend 1.2% of the value of their sales on such activities.

Machinery

Quebec's machinery industry performed very strongly in 1988, enabling manufacturers to increase their output and post high profits. Under the combined impact of strong growth in investment by Canadian companies, good sales performance abroad and a firmer metals sector, demand for machinery was high in 1988. Overall, the value of shipments rose by 15.2% during the year to $1.5 billion. This performance was all the more positive since selling prices for the industry's products increased by a mere 3.0% in 1988 according to the Canadian industrial selling price index, leaving real growth at more than 12%. Quebec's share of Canadian shipments of machinery none the less remained virtually unchanged in 1988 at 15.1%, as the other regions of Canada as a whole recorded similar results.

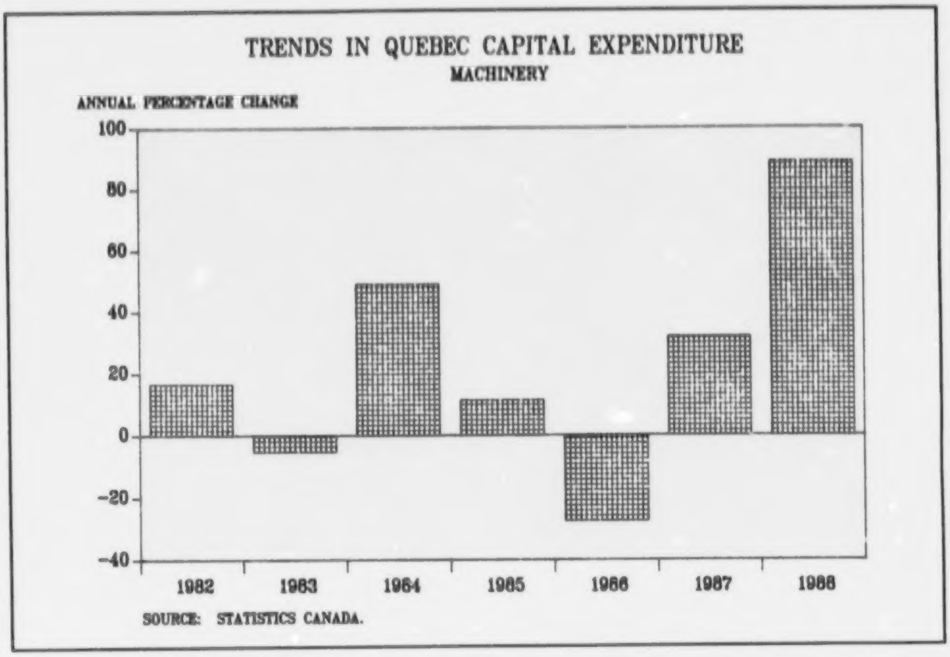
Foreign markets, which absorb approximately one-quarter of shipments from the Quebec machinery industry, contributed to its growth in 1988. The main exports, notably machinery for the pulp and paper industry, metal work, woodworking and the textile industry, and special-use industrial machinery, largely grew during the year.

The good sales performance led to a marked increase in employment in 1988. According to the Labour Force Survey (LFS), the number of persons employed in the industry in Quebec grew by 11.8% to a record 19,000. This strong job creation in the province, combined with the minimal 1.3% increase in the number of employees in this industry across the country, meant that Quebec increased its relative share of Canadian employment to 24.7% in 1988 from 22.4% last year.

Activity in the machinery industry was highly profitable in 1988. Canadian machinery firms with assets over $10 million declared profits of $376 million in 1988, 76.5% more than last year.

The improvement in firms' financial position and the higher production capacity utilization rate, which went from 57.7% (nine months) in 1987 to 63% (nine months) this year, stimulated investment in 1988. Quebec machinery firms made capital expenditure totalling $174.3 million during the year, almost double the amounts invested in 1987. Manufacturers of machinery for offices and commercial establishments contributed handsomely to this strong growth by raising their capital investment from $67.6 million in

Graph 22



1987 to $144.7 million in 1988, primarily for the acquisition of more modern equipment. Quebec accounted for close to 40% of all capital expenditure in Canada's machinery industry in 1988, a figure almost three times as high as its share of production.

In Quebec, a total of $19 million was spent on research and development in the non-office machinery industry, 90% of it on running expenses. In Canada, those machinery firms which carry out R&D work spend 2.3% of the value of their sales on such activities. While R&D spending in the Quebec machinery industry has grown substantially since 1984, in real terms it is still lower than at the start of the decade. This industry employs 284 researchers, 31% of them professionals. Some 63 firms are conducting R&D work in Quebec, the largest being General Electric (research on electric turbine components), Electrovert (development of soldering machines for the electronics industry) and Canadian Liquid Air (development of new gas equipment).

A total of $35 million was spent on R&D by the office machinery industry in Quebec (1986). This expenditure grew at a high annual rate of more than 16% from 1981 to 1986. Approximately 85% of this expenditure goes on running expenses, while the remainder is spent on capital assets. Across Canada, those firms in this industry which carry out R&D work spend 3.5% of the value of their sales on industrial R&D. In Quebec, R&D activities in this sector are conducted by 23 companies. Some 500 people are assigned to such work, 285 of them professionals. The main Quebec firms carrying out R&D work in this sector are Philips and Ogivar (microcomputer design), XIOS (microcomputers, operating systems and communications protocols for automated office systems), Comterm (development of communications terminals, controllers and other peripheral devices) and Datagram (development of computer communication systems products).

Transportation equipment

Quebec's transportation equipment industry, which includes several of the province's largest manufacturing firms, notably General Motors of Canada (GM), Bombardier and Hyundai, staged a spectacular comeback in 1988. Note, however, that in 1987 the temporary closure of GM's Boisbriand plant had led to a marked drop in Quebec's exports. This year, production at GM's automobile assembly plant in Boisbriand ran without interruption, and this helped to bring back up the value of exports of private cars loaded in Quebec. Added to this was the sound performance posted by the aeronautical industry, firm automobile sales in North America and strong foreign demand for several of its products. Overall, the value of shipments from Quebec transportation equipment manufacturers climbed by almost 24% in real terms in 1988 to $6.1 billion. This strong growth meant that Quebec increased its share of Canadian shipments of transportation equipment from 12.1% in 1987 to 13.0% in 1988.

Quebec's transportation equipment industry, which exports more than 70% of its output, benefitted from sustained foreign demand for its products in 1988. Quebec firms won several major manufacturing contracts during the year. Extremely active in this regard was Montreal's Bombardier, which offers a diversified range of products for ground transportation and aeronautics.

In the aeronautics sector, the strong export activity was due to numerous developments, among them:

- increased sales of Canadair's Challenger executive twin-jet, up from 17 aircraft in 1987 to 23 in 1988;

- the marked increase in deliveries of components and landing gear to the U.S. army by Héroux, a Longueuil manufacturer. Héroux had won a major $88 million contract from the U.S. army to build landing gear for 250 KC-135R air tankers;

- increased utilization of production capacity by Bell Helicopter in Mirabel. With the gradual transfer to Mirabel of commercial aircraft production lines from Fort Worth, Texas, the number of helicopters manufactured at the Mirabel plant went from 55 in 1987 to 134 in 1988;

- completion of the first anti-aircraft defence vehicles (equipped with the ADATS missile system) at the St. Jean sur Richelieu plant of Oerlikon Aerospace, which won contracts from the U.S. and Canadian Armed Forces worth $1 billion and $650 million respectively.

An equally promising year may be expected in 1989 for Quebec's aeronautical industry, as several major manufacturing contracts were awarded to Quebec firms during 1988, in particular:

- Bombardier signed a major $1.2 billion contract with Aérospatiale of France for the design, development and manufacture of aircraft components for the new generation of Airbus aircraft (A330 and A340). The agreement, without precedent in the annals of Canadian aeronautical history, covers a 16-year period;

- Bombardier signed a subcontracting agreement with British Aerospace PLC under the Airbus program. The $400 million contract is for the manufacture of aircraft wing components.

The railway rolling stock sector also performed well in 1988, with other sales contracts taking the place of the replacement of subway cars for the New York City Transit Authority ($1 billion). Bombardier of Montreal was very active in this area, winning several contracts, including:

- manufacture of 50 suburban railway cars for Boston's Massachusetts Bay Transportation Authority ($56.5 million). The contract also includes an option for a further 50 cars, which would raise its total value to $115 million;

- construction of 24 cars for the Montreal-Rigaud line ($31 million). This contract from the Quebec Department of Transport means that more than 200 workers can be recalled to the firm's La Pocatière facilities;

- manufacture of 50 diesel electric locomotives for Nigeria ($101 million). For Bombardier's railway division in eastern Montreal this meant the recall of 400 workers who had been on temporary lay-off since November 1987.

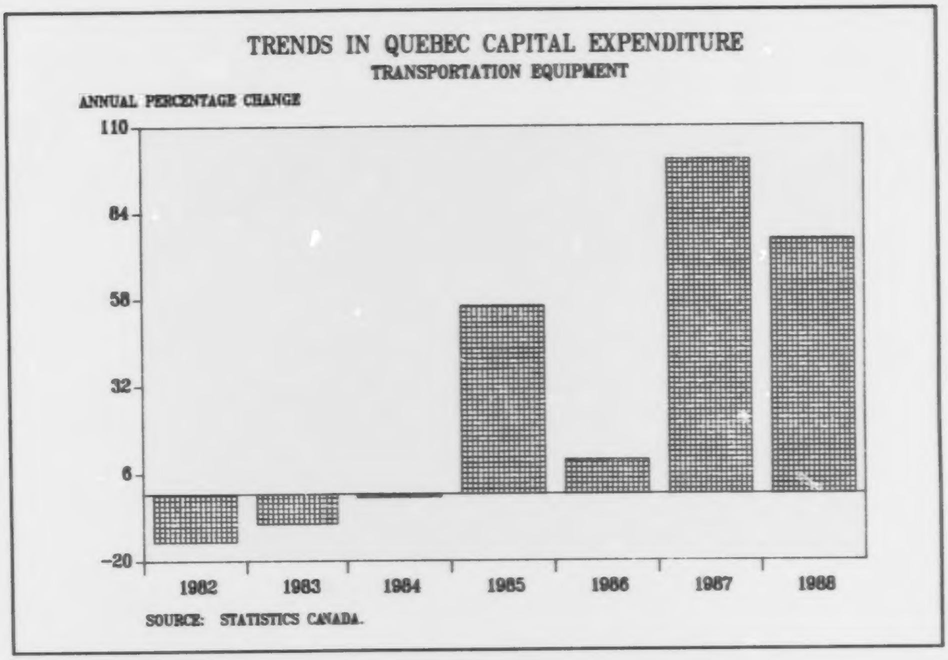
In the shipyards, activities remained slow in 1988, with order books almost empty. Marine Industries Ltd. had to implement a drastic recovery program early in the year to ensure its survival. The company decided, among other things, to focus its shipbuilding activities in Lauzon, to permanently close its Vickers shipbuilding division in eastern Montreal and to change the role of the Sorel shipyard, which will henceforth be closely tied to hydro-electricity. This decision led to the loss of more than 600 direct jobs.

Overall, the increased output of transportation equipment companies, the restoration of exports of private cars and the establishment of a number of major plants, especially by Oerlikon Aerospace and Hyundai, led to substantial employment growth in 1988. According to the Labour Force Survey (LFS), the number of persons employed rose by more than 30% during the year to a new record of 46,000. This was all the more encouraging since elsewhere in the country the number of employees in transportation equipment manufacturing firms rose by a mere 6.0%, bringing Quebec's share of total Canadian employment from 14.6% in 1987 to 18.6% in 1988.

The profitability of the transportation equipment industry improved considerably in 1988, to judge by data on the base profits of Canadian firms with assets over $10 million. After falling more than 30% in 1987, these companies' profits showed a 46% gain in 1988, reaching $2.8 billion.

Quebec's transportation equipment manufacturers substantially increased their investment in 1988. In all, capital expenditure reached a record $483 million during the year, 76% more than in 1987. A large part of this increase was attributable to the construction of an automobile assembly plant in Bromont by Hyundai of Korea ($350 million) and the modernization of GM's Boisbriand plant ($450 million). Construction work on Hyundai's plant was completed by year end. Production of the first models (Sonata) has already begun, with the first cars rolling from the assembly lines in January 1989. When the plant reaches full production in

Graph 23



SOURCE: STATISTICS CANADA.

1991, it will employ 1,500 people. GM's investment includes $300 million for construction of an ultramodern paintshop, which should begin operation in fall 1989, and $150 million to install new equipment for the assembly of Oldsmobile Cutlass Ciera models. Other major plant expansion, modernization and establishment projects were also completed (or in the process of completion) in 1988, among them:

- construction of a plant for manufacturing aluminum automobile cylinder heads and manifolds (112 milmillion) by the French firm Fonderies Montupet at Rivière Beaudette, in Vaudreuil County. This will lead to the creation of 650 jobs when the company is operating at full capacity in five year's time;

- construction of a second plant for aircraft engine parts in Bromont by General Electric of Canada (GE) ($38 million), leading to the creation of more than 200 jobs.

According to the latest data available (1986), the aircraft and aircraft parts industry spent more than $200 million on research and development activities in Quebec, making this industry the largest R&D spender in the province (one-quarter of all the province's industrial R&D). Across Canada, those firms in the aircraft and aircraft parts sector which carry out R&D work spend 13.9% of the value of their sales on such activities, a proportion that is substantially higher than for manufacturing firms as a whole which perform R&D work. But since the early 1980s, the real growth of R&D spending in the aircraft and aircraft parts sector in Quebec has been lower than for Quebec's manufacturing sector as a whole (1.5% vs. 4.2%). In 1986, 2,756 people were employed in R&D activities in this industry in Quebec, and almost one-half of them were professionals. Despite the large number of researchers employed, R&D activity is concentrated in a tiny number of companies, less than 10 altogether. The largest of these firms are Pratt & Whitney Canada (research on gas turbines for aeronautical propulsion), Canadair (development of different aircraft models and monitoring systems) and Bell Helicopter Textron (R&D on helicopters).

Aside from the aeronautical industry, 17 Quebec transportation equipment firms are conducting industrial R&D. These firms are in the automobile and truck, railway rolling stock and ship construction and repair sectors. A total of $22 million was spent on industrial R&D in these sectors in 1986, virtually the same amount as in the previous three years. More than 97% of this expenditure was running expenses, with capital expenditure accounting for just over 2%. In Canada, those firms in this sector which conduct R&D work spend 0.3% of the value of their sales on such activities. Quebec's transportation equipment industry employs some 370 researchers, 45% of them professionals. The main companies carrying out industrial R&D work in this sector are Bombardier (R&D on diesel engines and sundry vehicles) and Marine Industries (development of a steel sheet welding process for submarines).

Electrical and electronic products industries

Quebec's electrical and electronic products industry, which includes both such major corporations as IBM, Northern Telecom and General Electric of Canada and smaller firms like Ogivar and Circo Craft, experienced strong growth in 1988. Boosted by the fast rise in business investment and the renewed development work by Hydro Quebec, which helped in particular to increase purchases of industrial electrical equipment, demand for industry products grew considerably during the year. Added to these factors were the good performance of foreign sales, sustained activity in the telecommunications sector and the increase in sales of electrical equipment.

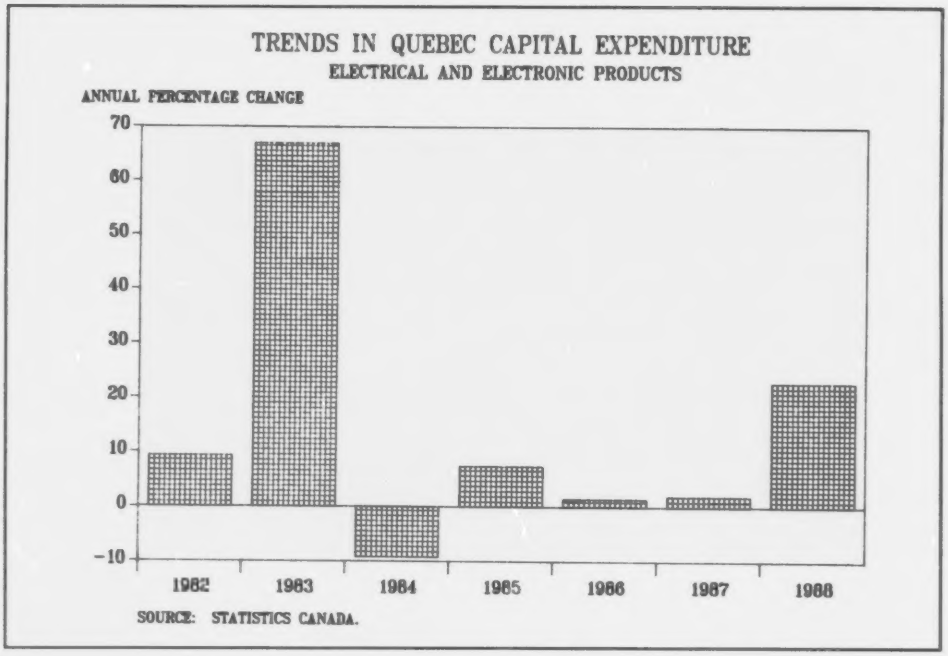
Overall, the value of deliveries reached $4.9 billion in 1988, a substantial 15.2% more than last year. Taking into account the 3.9% increase in prices for its products, the real growth of electrical and electronic products firms in Quebec was approximately 11% in 1988, one of the highest rates in the province's manufacturing sector, behind the transportation equipment and primary metals industries. As growth was slightly slower elsewhere in Canada, Quebec's share of Canadian shipments by value rose from 26.8% in 1987 to 27.4% in 1988. Note that Quebec's electrical and electronic products manufacturers send more than 60% of their shipments outside the province, and close to one-half of that goes to the United States.

The profitability of the electrical and electronic products industry continued to improve in 1988, to judge by Canadian statistics on the base profits of companies with assets over $10 million, which were up to $1.54 billion in 1988 from $1.39 billion in 1987.

On the other hand, the strong output growth was not accompanied by an increase in employment in 1988. According to the Labour Force Survey (LFS), the number of persons employed in Quebec in the electrical and electronic products industry stood at an average of 39,000 during the year, almost 6,000 lower than in 1987. This may be largely explained by the substantial increase in capital investment in equipment modernization over the past few years, which has had the effect of reducing manpower requirements, and by the closure of a number of production units. A case in point was the subsidiary of the U.S. multinational, Leviton, one of the main manufacturers and distributors of electrical components and cables in North America, which announced the lay-off of more than 250 workers at its Montreal plant under a program to streamline its Canadian operations. Spar Aerospace also cut staff in its St. Anne de Bellevue division, where approximately 160 people are expected to be laid off by the end of 1989.

The need to follow the latest technological developments, to make the industry more competitive on international markets and increase production capacity in order to better meet constantly growing demand encouraged investment in 1988. Quebec's electrical and electronic products manufacturers made record capital expenditure of $194.5 million in 1988, 22% more than last year. During this period, significant increases were posted by manufacturers of industrial electrical equipment (+$7.4 million or +106%), telecommunications equipment (+$29.9 million or +34%) and miscellaneous electrical products (+$6.2 million or +61.4%). Only capital investment in the electrical wire and cable sector declined, falling to $24.3 million in 1988 from $28.3 million in 1987.

Graph 24



SOURCE: STATISTICS CANADA.

Among the main capital projects being carried out by Quebec electrical and electronic products manufacturers were:

- expansion of IBM Canada's integrated circuit manufacturing plant in Bromont and purchase of new equipment ($85 million);
- expansion of the Matrox Electronics Systems plant in St. Laurent ($15 million), specializing in the development and manufacture of electronic components;
- expansion of Northern Telecom's plant in St. Laurent ($30 million), specializing in the manufacture of fibre optic transmission equipment and telecommunications systems;

- modernization of CAMCO's household appliance plant in Montreal ($25 million); CAMCO is a subsidiary of General Electric of Canada.

Another highlight of 1988 was the sale of Comterm, of Pointe Claire, a computer and office automation equipment manufacturer, to two Toronto mercantile banks. Comterm was forced into this decision after being placed under the protection of the Companies' Creditors Arrangement Act to avoid bankruptcy due to the deterioration in its financial position.

In Quebec, the electronic equipment industry (telecommunications equipment, electronic parts and components and other electronic equipment) ranks second in industrial R&D spending ($145 million in 1986). The stiff international competition in this sector and rapidly evolving technology force the 50 or so Quebec firms that conduct R&D activities in this sector to adopt a policy of high-level specialization and to reinvest in research a significant proportion of earnings from their sales (15-20% in the case of the components and other electronic equipment industry and as much as 30% in the case of the telecommunications industry). In addition, real R&D spending growth in the Quebec electronic equipment industry is quite high (5.2% a year since 1981). A high proportion (95%) of R&D expenditure in this industry is running expenses, with the remainder allocated to capital assets.

As in other high-technology industries, the total percentage of employees in the professional category assigned to R&D activity is high (more than 1,300 out of 2,220). The main Quebec electronic equipment firms carrying out R&D are Canadian Marconi (R&D on avionics navigation, detection and in-board management systems), Bell-Northern Research (research on telecommunications and systems operation), Northern Telecom (R&D on transmission cables, power systems for telephone stations and development of digital circuits and integrated circuits), and CAE Electronics (development of flight simulators and control rooms for nuclear power stations).

Quebec's electrical equipment industry other than office machinery carries out R&D worth $14 million a year. This expenditure, made by about 30 firms, is growing fast (real annual rate of 9.6% from 1981 to 1986). Of the 235 or so people assigned to R&D in this industry, about one-half are professionals. The main firms conducting R&D activity in this field in Quebec are Unisys Canada (development of power supply systems for computers and peripheral devices) and CAMCO (development of household appliances). Those firms in the electrical equipment sector which perform R&D work in Canada spend 1.4% of the value of their sales on such activity.

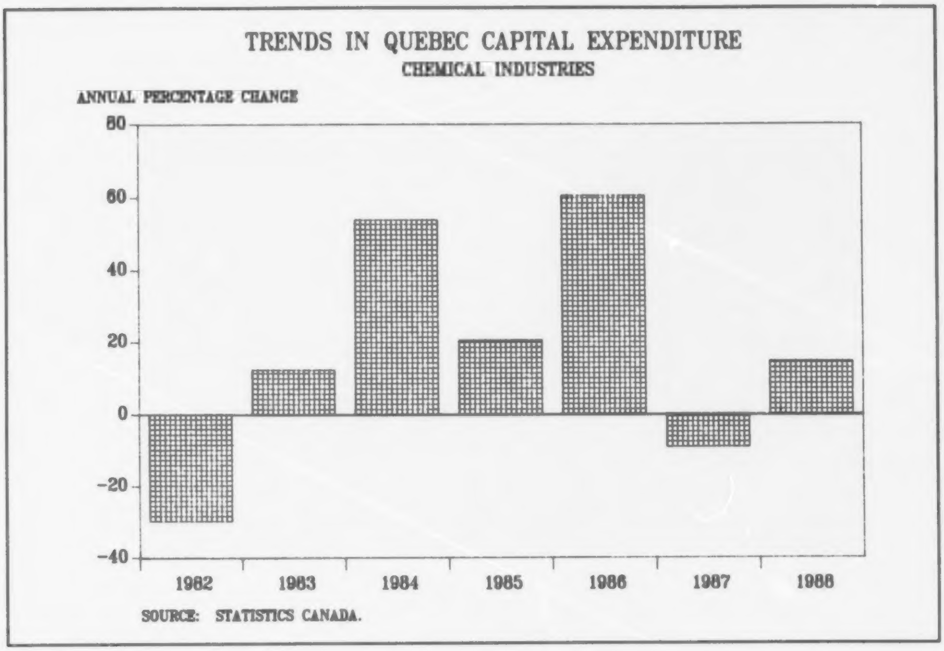
Chemical industry

Quebec's chemical industry performed well in 1988. Its main components, industrial chemicals, pharmaceuticals and medicines, toilet preparations, and plastics and resins largely benefitted from sustained demand during the year. Thus, Quebec's chemical products manufacturers increased their shipments by 11.3% and made high profits in 1988.

The profitability of the Canadian chemical industry was excellent in 1988, largely due to the almost 10% rise in selling prices for its products. The base profits of Canadian chemical products manufacturers with assets over $10 million jumped up by 32.1% from their 1987 level to reach $4 billion.

The industry's sound sales performance in Quebec led to rapid employment growth in 1988. According to the Labour Force Survey (LFS), an average of 32,000 persons were employed during the year in Quebec in chemical products firms, 6.7% more than the previous year. This was all the more encouraging since elsewhere in Canada the number of employees remained virtually unchanged, so that Quebec manufacturers accounted for approximately one-third of all jobs in Canada's chemical industry. The only fly in the ointment was the announcement of the closure of its Montreal plant by Gillette, a manufacturer of a wide range of toilet preparations (deodorant, shampoo, conditioner, setting lotion, etc.) and razor blades. This decision, reached as part of a worldwide reorganization plan begun in early 1987, will lead to the lay-off of some 530 people over the next 18 months.

Graph 25



Improved corporate balance sheets and the need to modernize facilities encouraged investment in 1988. Quebec's manufacturers of chemical products made capital expenditure of $418.4 million in 1988, compared with $365 million in 1987. Accounting for a substantial part of this increase was the pharmaceutical and medicine sector, where capital investment almost doubled to $62.4 million. This strong recovery is due to the adoption in November 1987 of Bill C-22 on the protection of pharmaceutical patents, which prompted a large number of pharmaceutical firms to revise their investment programs upward. Under the new statute, new patented medical drugs marketed by manufacturers will be protected for a minimum exclusive period of seven years. Previously, firms specializing in the production of generic drugs merely had to pay royalties to these manufacturers in order to be entitled to reproduce such drugs immediately. Among the main projects in progress or announced in 1988 in Quebec in this sector were:

- investment of $55 million by Merck Frosst Canada, the country's largest pharmaceutical firm, to triple the surface area of its Kirkland facilities. A further $150 million to be added to this amount will be spent on R&D over the next five years;

- investment of $53 million by Nordic Laboratories in its Laval facilities. Of this amount, $10 million will be spent on expanding the existing premises, with $43 million going to R&D;

- investment of $50.4 million by Squibb in Montreal for R&D activity in the pharmaceutical field over the next five years. Squibb has completed the $7 million modernization of its Montreal plant and construction of a warehouse, as well as a $5 million project to expand its offices in St. Laurent the site of its Canadian head office.

Capital investment gains were also seen in the toilet preparations (+$11 million or +89.6%) and plastics and synthetic resins (+$4.5 million or +11.6%) sectors. In the industrial chemicals sector, which accounts for some 55% of total investment in the industry, capital expenditure remained quite steady, going from $226 million in 1987 to $235.8 million in 1988. For the latter sector, major capital projects in 1988 included construction of two new liquid hydrogen plants, by Canadian Oxygen in Magog ($30 million) and Hydrogenal Inc. in Bécancour ($15 million). Note that in 1988 Hydrogenal Inc. inaugurated another liquid hydrogen plant in Bécancour, requiring investment of $45 million.

Quebec's Société générale de financement (SGF) sold the Bio-Mega biotechnology research laboratory in Laval for $23.4 million to the Canadian subsidiary of the German multinational, Boehringer Ingelheim.

The chemical industry, excluding oil and coal and pharmaceuticals, has some 300 firms in Quebec. Of these companies, 56 were conducting research and development work. Industrial R&D spending by these firms is quite high, totalling $37 million in 1986, ranking the other chemical products industry sixth in Quebec in terms of R&D activity. Moreover, R&D spending by Quebec firms accounts for 23% of the research performed by this industry as a whole in Canada, with the remainder (67%) largely carried out in Ontario. The amounts spent on industrial R&D by the Quebec component of this industry have risen substantially over the past few years. This increase even surpassed the rate of growth of industrial R&D spending by this industry across Canada (annual real rate of 10.4% vs.

6.3% from 1981 to 1986). Approximately 534 people are employed in R&D in this industry in Quebec, 55% of them professionals. The main firms carrying out research in this sector in Quebec are Tioxide Canada (research on titanium dioxide and on clarification and filtration processes), Himont Canada (enhancement of polypropylene resins), Alcan (utilization of alumina for other than metallurgical purposes) and Union Carbide (R&D on polyethylene and ethylene oxide). Across Canada, those firms which carry out R&D work in this sector spend 1.4% of the value of their sales on such activity.

Quebec's pharmaceutical and medicine industry includes 45 firms, 28 of which carry out R&D work worth $33 million (1986, most recent data available). In Canada, those firms which conduct R&D work in this field spend 9% of the value of their sales on such activity. By way of comparison, Canadian manufacturing industries as a whole which conduct R&D work spend some 1.5% of the value of their shipments on R&D activities. Unlike other industries, R&D spending by Quebec's pharmaceutical and medicine industry has risen little in real terms during the 1980s (1% annual rate from 1981 to 1986). Moreover, while 42% of the value of this industry's shipments comes from Quebec, the province only accounts for 32% of R&D (50% of R&D is performed in Ontario). None the less, the adoption by the federal government of Bill C-22 on the protection of pharmaceutical patents could lead to a marked rise in R&D spending in this sector in the years to come. Indeed, several new projects have already been announced by various firms in this sector. The main pharmaceutical and drug firms carrying out R&D work in Quebec are Merck Frosst Canada (basic research on leukotriene), Bristol-Myers Canada (development of new antibiotics and drugs) and Bio Research (pre-clinical and clinical safety tests for other firms).

Table 10

CAPITAL AND INDUSTRIAL GOODS INDUSTRIES
shipments, employment and capital expenditure

Group	Shipments ($ million)		Employment ('000)		Capital expenditure ($ million)	
	1987	1988	1987	1988	1987	1988
Rubber and plastics	1 193*	1 324*	19	26	78	72
Textiles	3 141	3 294	32	26	86	103
Printing	2 941	3 241	43	42	68	87
Metal fabricating	4 478	4 497	37	39	107	124
Machinery	1 293	1 490	17	19	92	174
Transportation equipment	5 042	6 155	34	46	275	483
Electrical products	4 221	4 863	45	39	158	195
Chemicals	4 495	5 002	30	32	365	418

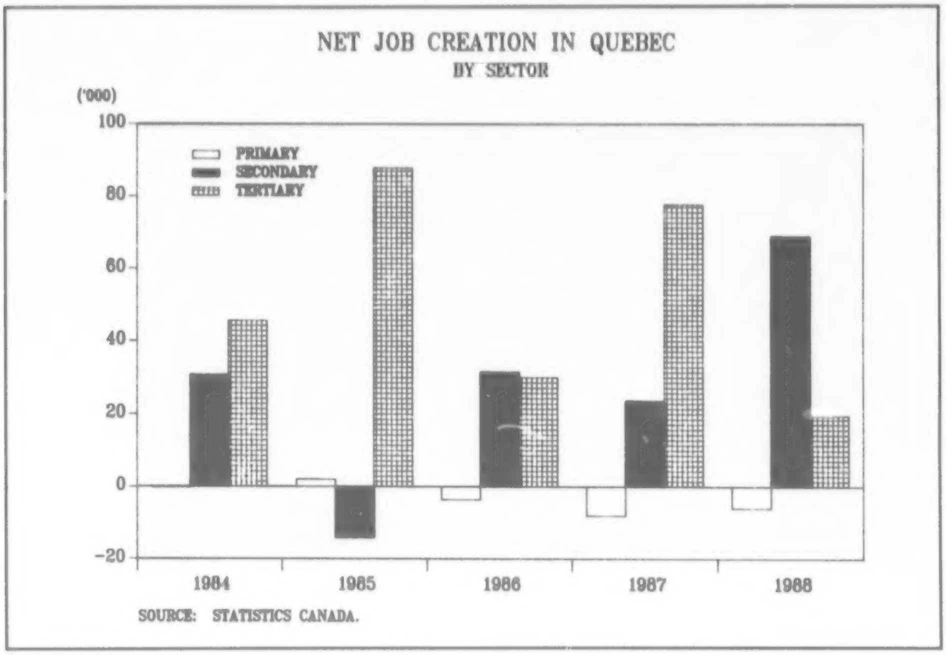
Note: *Excluding rubber industry.

Source: Statistics Canada.

TERTIARY SECTOR

The tertiary sector is by far the most important branch of economic activity in Quebec. Comprising numerous very varied services, namely transportation, communications, electricity, trade, finance, hospitals, education, restaurants and public administration, the sector accounts for more than two-thirds of the province's gross domestic product (GDP) and 70% of all jobs in the province.

Graph 26



SOURCE: STATISTICS CANADA.

In 1988, Quebec's tertiary sector benefitted from a positive climate which allowed it to post real GDP growth of 5.4%. Rapid expansion in the communications industry, increased firm electricity sales, sustained trade activity and a sound performance from financial institutions were the main growth factors during the year.

Unlike last year, when the tertiary sector accounted for more than 80% of new jobs created in Quebec, the sector's contribution was down considerably in 1988. Indeed, this sector, accounting for more than 70% of total employment, delivered only about one-quarter of new jobs during the year. Overall, only 19,000 additional positions were created in the various tertiary industries in 1988, representing a substantial drop from the 78,000 positions created last year. Most tertiary subsectors posted fewer jobs in 1988, or slight increases, among them trade (-0.1%), public administration (-3.3%) and public utilities (-4.0%).

Capital expenditure by Quebec's tertiary sector totalled $12.5 billion in 1988, an exceptional 18% more than the previous year. A large portion of this growth was attributable to Hydro Quebec's development projects and the large-scale renovation and construction work being carried out on numerous office and commercial buildings, especially in downtown Montreal.

Transportation, communications and other utilities

Quebec's public utilities sector, consisting of transportation and communications industries and other utilities, notably Hydro Quebec, experienced rapid growth in 1988. Real GDP grew by 6.5% during the year, due primarily to the strong performance in communications and improved firm electricity sales in Quebec.

With regard to electricity, which in 1987 became Quebec's prime source of energy (supplying more than 42% of the province's energy needs, as against 41% for oil), domestic demand was up strongly in 1988. Benefitting from continued economic growth, less clement weather and a growing number of users owing to strong residential and industrial construction in 1987, firm electricity sales in Quebec grew in volume by close to 10% in 1988. This meant, however, a corresponding reduction in the amount of power available for the surplus energy market in Quebec and outside the province. Hydro Quebec was forced to inject additional kilowatthours into its primary market in order to meet demand, and therefore made fewer electricity sales on export markets. Investment rose substantially in Quebec's electricity industry in 1988. Overall, at $2.2 billion during the year, capital investment was up 29% over 1987. All areas of activity posted increases, in particular electric power generation (+59%) and transmission (+60%). A large part of this increase was attributable to additional capacity at LG2-A ($1.7 billion), construction of a power transmission line to James Bay ($850 million) and ongoing work to provide additional capacity at the Manic 5 hydroelectric plant on the North Shore ($800 million).

Another highlight of 1988 was the launching of Phase II of the James Bay hydroelectric development. Investment of $7.5 billion is scheduled, including construction of three plants with a total capacity of 2,500 megawatts and an electric power transmission line to the U.S. border. In all, over a seven-year period, 40,000 jobs a year will be created on construction sites and in the plants. This renewal of work on this vast site, after a nine-year hiatus, was made possible by the signing of supply contracts for 2,700 megawatts of electricity worth $40 billion with several U.S. states, including New York ($21 billion) and the New England states ($11.6 billion), and with New Brunswick.

The transportation sector, which is closely tied to developments in the economy as a whole, took advantage of the growth in manufacturing and mineral shipments to substantially increase its operating volume in 1988. The main focus of attention during the year, though, was definitely the deregulation of the trucking industry. Indeed, stiff competition developed among road haulage firms with the arrival on the market of several new companies, accompanied by a substantial reduction in rates. It was not long before the effects of this were felt: the large Canadian carrier Route Canada was forced into bankruptcy. Other firms also had some difficulties in terms of profit margins, notably the Quebec carrier Cabano Expeditex, which had to cut back staff by 10%, laying off 250 employees. Expenditure made by Quebec carriers as a whole rose substantially in 1988. Boosted by increased investment in air transportation (+$181.3 million), urban and intercity transportation (+$60.3 million) and marine transportation (+$33.9 million), total capital investment in transportation climbed to $779.7 million in 1988 from $465.7 million the previous year.

In the communications industry, telecommunications services, which account for three-quarters of output, posted good results in 1988. Moreover, thanks to heavy investment in machinery and equipment in telegraph cable networks and substantial expenditure on construction in telephone systems, the total invested by the communications industry increased by 13.6% in 1988 to $982.1 million. Another highlight of 1988 was the inauguration in Montreal of Teleport, a centre of excellence for the development of telecommunications, audio-visual and data communications products.

The federal government also finalized the gradual privatization of Air Canada by offering 45% of the corporation's shares to the private sector.

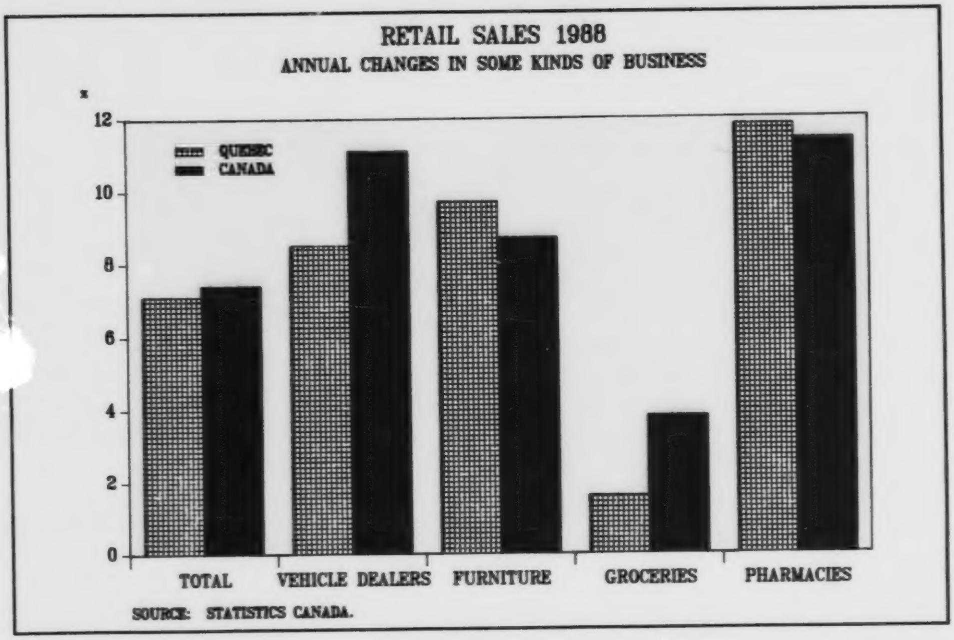
In Quebec's transportation, communications and other utilities industry (excluding electricity), 16 firms conduct research and development work worth $42 million. In Quebec, real R&D spending in this industry has grown at a high rate in recent years (19% a year from 1981 to 1986), but across Canada, those firms which carry out R&D work in this sector spend only a small proportion (0.4%) of the value of their sales on industrial R&D. As for R&D spending in the electric power industry, two Quebec firms are active in this field. The largest is Hydro Quebec, whose annual budget for R&D is almost $100 million.

Trade

Trade activity in Quebec, which has been characterized in the past few years by a proliferation of boutiques and stores, especially in downtown Montreal, continued to grow in 1988. Due to the increase in disposable personal income, good labour market conditions and greater consumer confidence in the economic outlook, consumer spending rose substantially during the year. The real GDP of the trade sector, including retailers and wholesalers, climbed by 6.4% in 1988, making it one of the most dynamic sectors in the economy.

The most marked growth in trade was seen in retail sales. With households borrowing more and using their savings to sustain a high level of spending, Quebec retailers pushed up their sales by 7.1% to $41.6 billion in 1988. By far the majority of types of trade increased their sales this year, especially motor vehicle dealers. For the latter, who were more inventive than ever in their sales techniques to attract consumers, notably using various incentives to purchase, including advantageous financing terms, sales totalled $8.9 billion in 1988, 9.1% more than last year. Closely following in the footsteps of residen-

Graph 27



SOURCE: STATISTICS CANADA.

tial housing starts, furniture, household appliance and hardware products manufacturers also did good business in 1988, with sales up by 9.7%, 21.2% and 11.6% respectively. In the case of hardware stores, retailers benefitted from growing activity in the secondary, renovations market. Good results were also recorded by general stores (+16.9%), grocery stores, confectionery stores and miscellaneous products (+10.4%), book and stationery stores (+23.6%) and sporting goods stores (+17.9%).

Rather surprisingly, the growth in trade activity in Quebec in 1988 was not reflected in employment. According to the Labour Force Survey, the number of persons employed in the trade sector fell to 512,700 from 513,200 the previous year.

With construction work being carried out on numerous shopping malls, notably Cours Mont-Royal, Promenades de la Cathédrale and Place Montreal Trust in downtown Montreal, Quebec's trade sector spent a record $545.1 million in 1988, an increase of some $40 million over 1987.

Another feature of 1988 was the merger of two Quebec distribution giants in the field of hardware and building supplies, Ro-Na and Dismat.

Finance, insurance and real estate

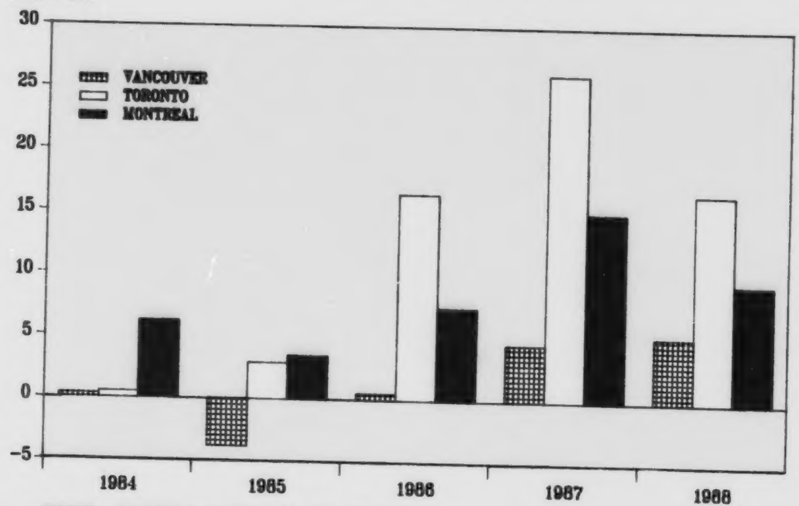
With the exception of securities brokers, who were hard hit by the stock market crash of October 1987, financial, insurance and real estate institutions performed well in 1988. Thanks to rapid growth in consumer credit, mortgage loans and business financing, most institutions increased their operating volumes during the year. Overall, the sector's real GDP climbed by 7.5% in 1988, its best performance since 1984.

Banks put in a particularly good showing in 1988. Having sustained book losses in 1987 because of higher than anticipated reserves for loans to developing countries, they rapidly righted the balance sheet in 1988. Taking advantage of the improved portfolio of loans to the private sector and the increase in net interest earnings, banking institutions enjoyed excellent profits in 1988.

A marked slowdown was, however, recorded by securities brokers, whose activities were hard hit by the October 1987 crash. Indeed, this event led to a profound shake-up in the management of human and financial resources in 1988. With the volume of shares negotiated plummeting by more than 40% and fewer new share issues floated, brokerage houses suffered substantial losses in 1988. A number of them had to take drastic streamlining measures to deal with the seriousness of the situation. Some firms cut back on staff by as much as 15% during the year, either through lay-offs, or through attrition. The collapse of market prices in October 1987 also had a negative impact on the Quebec Stock Savings Plan (QSSP), as few companies issued shares in 1988, for lack of interest from investors as well as issuers.

Graph 28

NEW HOUSING PRICE INDEX
ANNUAL PERCENTAGE CHANGE



SOURCE: STATISTICS CANADA, CAT. NU. 62-007.

The finance sector was very active in 1988 in terms of developments in its organizational structure, with the process of decompartmentalization of the four major categories of financial sector companies moving ahead more quickly. Indeed, less than one year after the new legislation governing the ownership of securities brokers came into effect, most of the large brokerage firms have been taken over by chartered banks. For instance, Wood Gundy was acquired by the Canadian Imperial Bank of Commerce, McLeod Young Weir by the Bank of Nova Scotia, Dominion Securities by the Royal Bank and Nesbitt Thomson Deacon by the Bank of Montreal. Others, such as the Toronto Dominion Bank and the National Bank, chose to set up discount brokerage services.

Another feature of 1988 was the establishment of international finance centres (IFCs) in Montreal. The kick-off was given in June 1988 when six financial institutions, including four subsidiaries of foreign firms and two Quebec brokerage houses, were granted IFC status. Note that institutions with this status are authorized to perform financial transactions of an international nature from Montreal without attracting capital gains tax or Quebec corporation tax. Major foreign financial institutions also established offices in Montreal, notably the Japanese banks, Fuji and

Mitsubishi, and the world's largest brokerage firm, Nomura Securities of Tokyo.

Overall, financial institutions and insurance and real estate agencies made capital investment of $2.1 billion in 1988, a substantial 20% more than last year.

Socio-cultural, business and personal services

The huge socio-cultural, business and personal services sector, which has for some years captured a growing share of total employment in Quebec, performed very strongly in 1988. Including activities as varied as education, health care, accommodation, restaurants, business services, recreation and personal services, the sector posted real GDP growth of 3.8%, its best performance since 1985.

Reflecting the growth in its activities, the service sector added 31,400 workers during the year, a 3.2% increase over 1987. In all, the number of persons employed topped one million for the first time ever, reaching 1,004,100. Interestingly, all subgroups gained ground. The strongest employment growth was seen in business services, especially advertising agencies, accounting services and data processing consultants, with a gain of close to 20% (+19,000) since last year. Job creation was also high in personal services (+5.3%), religious organizations (+3.7%) and miscellaneous services (+3.1%).

The service sector was also active on the investment front in 1988, with spending of approximately $2.4 billion in 1988, or $240 million more than last year. Almost all of this increase was attributable to the purchase of machinery and equipment for hospitals and educational and social service institutions, which together went from $1.8 billion in 1987 to $2 billion in 1988.

Research and development activity in this sector is conducted primarily in computer services and engineering services. In Quebec, some 59 firms are performing R&D work worth an estimated $18 million. The sums devoted to industrial R&D in this field in Quebec have been rising for some years (37% real annual rate from 1981 to 1986). This expenditure largely consists of running expenses, since capital investment accounts for a mere 10% of the total. Across Canada, firms conducting R&D work in this field spend 15.1% of the value of their sales on these activities. The Quebec computer services industry employs 288 people in R&D work, 116 of them professionals. The main data processing firms carrying out research in Quebec are ACDS Systèmes Graphiques (development of advanced software) and IST (development of management information systems).

Engineering and other scientific services are third in line in Quebec in terms of R&D spending. In 1986, the 64 Quebec firms conducting research in this area spent $52 million on industrial R&D, or 6% of all industrial R&D expenditure in Quebec. Some 87% of this sum consists of running expenses, with the remainder going to capital investment. Over the past few years, the engineering and other scientific services sector has substantially increased its industrial R&D spending, from $8 million in 1981 to $52 million in 1986. The real annual growth in this expenditure from 1981 to 1986 has been close to 40%. Expenditure on industrial R&D in this industry is made primarily in Quebec (17% of the Canadian total) and Ontario (45%). But note that in the case of this industry in Quebec, the proportion of industrial R&D activities conducted in this province is considerably lower than its 25% share of national earnings. Approximately 690 researchers are employed in Quebec, including 322 professionals. Across Canada, firms conducting R&D work in this industry allocate 22.8% of the value of their sales to R&D, the highest proportion of any industrial category in the country.

Public administration

Efforts to restrict the growth of public administration and defence bore fruit in 1988, to judge by the drop in the number of persons employed. Employment in the group, distributed almost equally among federal, provincial and municipal governments, fell to 198,700 this year, down 4.0% since 1987. Substantial job losses occurred in the federal (-1.5% or -1,000) and provincial governments (-9.2% or -7,000). According to the Labour Force Survey (LFS), only employment in municipal governments remained steady at 65,000.

Reflecting the substantial decline in employment, the gross domestic product (GDP), which measures the earnings generated by the sector, made little progress in 1988. In all, GDP rose by a mere 1.3% in real terms since the previous year, representing the lowest growth of any tertiary component.

Public administration recorded its strongest activity in investment in 1988, with capital expenditure by government departments climbing by 17.1% to $2.6 billion during the year.

Table 11

TERTIARY SECTOR IN QUEBEC
main indicators

	GDP ($ million)		Employment ('000)		Capital expenditure ($ million)	
Group	1987	1988	1987	1988	1987	1988
Transportation, communication and other utilities	9 314	9 924	226	226	3 240	4 138
Trade	11 045	11 754	513	513	506	545
Finance, insurance and real estate	12 625	13 573	168	165	1 784	2 113
Services	18 618	19 324	973	1 004	2 156	2 394
Public administration	5 069	5 135	207	199	2 874*	3 276*
Total	56 671	59 710	2 087	2 107	10 560	12 466

* Including institutions.

Source: Statistics Canada, Conference Board of Canada.

TOURISM

Performance

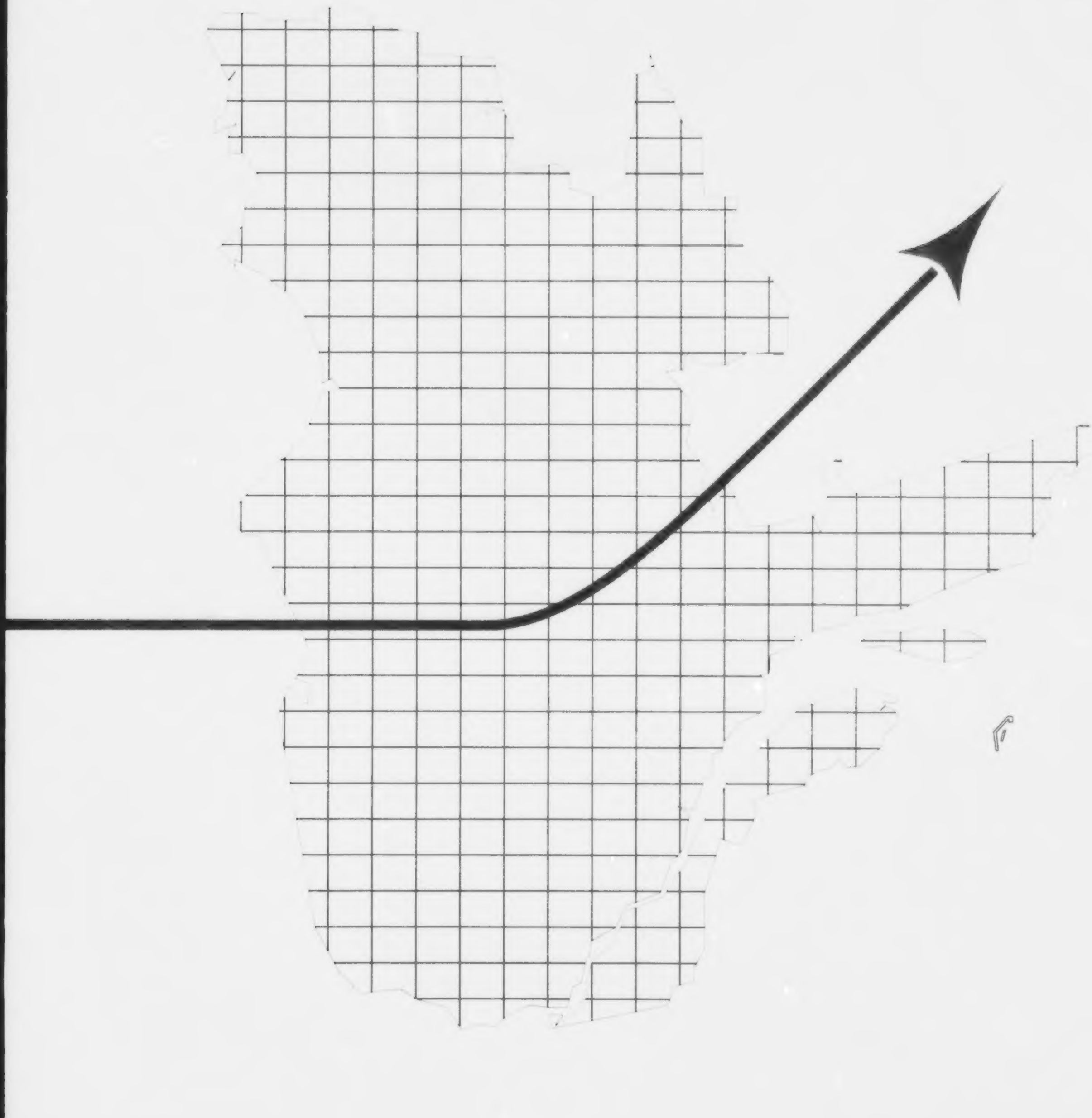
For the second year running, the number of American tourists visiting Quebec rose only slightly. Indeed, between January and November 1988, the number of American tourists entering Canada via Quebec was up by 1.3%, compared with 1.9% the previous year. On the other hand, the number of tourists from countries other than the U.S.A. rose by more than 20%, much less than in Canada as a whole. In 1987, the number of non-U.S. tourists had grown by close to 18%.

In short, tourism activity in Quebec remained at much the same level as in 1987. The hotel occupancy rate nevertheless wavered, especially during the summer (68.5% in July 1988 as against 69.8% in July 1987). Substantial drops were, however, posted in a number of regions: Magdalen Islands, Eastern Townships, Laurentians, Abitibi-Temiscaming and Manicouagan. On the other hand, the rate rose in Charlevoix, Heart of Quebec, Duplessis and Northern Quebec. Tourists appear to have deserted Montreal, Quebec City and the other traditional regions to some degree in favour of usually less travelled regions.

The lower hotel occupancy rate in Quebec City and Montreal is partly attributable to the smaller number of conventions held in the two cities. The number of conventioners fell by more than 55% in Montreal and more than 4% in the provincial capital. The use of tourism facilities declined in all Quebec regions except the Heart of Quebec and the Gaspé.

Earnings from tourism in Quebec in 1988 are estimated at over $4 billion, but this represents barely 18% of Canadian tourism receipts. Quebec's shortfall over the rest of the country lies largely in the foreign market, where the province's share is actually only 16% of Canadian earnings. None the less, more than 140,000 direct and indirect jobs depend on this industry in Quebec, or 13% of all jobs in this category in Canada. Although some progress has been made, Quebec is dragging its feet compared with the other provinces, since its tourism industry is smaller than the province's relative weight in the Canadian economy.

PART II: Overview of Québec regions in 1988



OVERVIEW OF QUEBEC REGIONS

Quebec regions

Quebec is divided into two distinct parts in terms of socio-economic characteristics: the outlying regions where the economy is resource-based, and the central regions where the economy is more diversified.

The resource regions - Gaspé, the Lower St. Lawrence, Saguenay-Lac St. Jean, Abitibi-Temiscaming, the North Shore and Northern Quebec - cover almost 90% of the surface area of Quebec, have a population of just under one million and depend mainly on forestry, mineral resources, hydro-electric power, wildlife and, in some areas, agriculture. With the exception of forests, the extent of natural resources varies from region to region; this resource base is sometimes supplemented by natural attractions, such as the scenery in the Gaspé and North Shore regions and Saguenay Fjord. Primary and manufacturing activity in these regions is geared to the extraction and primary processing of resources which are then exported to international markets. Far from major urban centres and spread over a vast area, the population of resource regions is generally clustered in small- to medium-size communities that often depend on one or two industries, making them vulnerable to resource depletion and market volatility. Income levels and the participation rate of the adult population in these regions are below the Quebec average, and their unemployment rate is generally higher than in other parts of the province. This is due in large measure to the seasonal nature of certain activities (logging, fishing, tourism, etc.) and the low degree of sophisticated tertiary activity.

Economic indicators in some resource-region communities approach provincial averages, however, notably in Rimouski, Baie Comeau, Chicoutimi-Jonquière and Rouyn-Noranda, where a high proportion of employment is in government and parapublic services and large corporations that pay relatively high wages.

The central regions are clustered around the historical axis of development in Quebec, namely the St. Lawrence plain and the Ottawa Valley; close to 85% of the provincial population lives in these regions. The economy of the central regions is far more developed and diversified than that of the outlying resource regions, with employment heavily concentrated in the tertiary and manufacturing sectors. These regions dominate overwhelmingly in terms of manufacturing activity, with close to 90% of employers, jobs and value added. Traditional industries continue to play a major role although there has been a rise in more modern industries that are geared more toward international markets. The central regions also have a quite healthy agricultural sector and account for close to two-thirds of farm jobs in Quebec. Unemployment rates generally hover around the provincial average, and per capita income is slightly higher than the average level in Quebec.

It is in the central regions that the most heavily urbanized areas of Quebec - the Montreal, Quebec City and Hull-Gatineau metropolitan areas - are located. These areas alone account for close to 60% of the Quebec population and provide over 60% of jobs in the province. The economy of these metropolitan areas is distinguished by the size of the tertiary sector, in particular the motor tertiary. Three-quarters of all jobs in the finance sector and 70% of jobs in public administration are concentrated in these three urban areas. The presence of corporate head offices and headquarters of international agencies gives these regions, particularly Montreal, an influence that extends outside Quebec. These urban centres, with close to 60% of manufacturing companies and jobs, boast universities where research and technological innovation take place, whence their role as development hubs in Quebec. The metropolitan areas usually have unemployment rates below the provincial average and stand out from the rest of Quebec by virtue of their significantly higher participation rates. Income and education levels are also, on the whole, above the provincial averages.

Table 12

REGIONAL POPULATIONS

REGION	Population 1986		Percentage change 1981-1986
	Number	%	%
Gaspé/Magdalen Islands	112 455	1,72	-2,30
Lower St Lawrence	210 770	3,22	-0,47
Saguenay/Lac St Jean	285 457	4,37	-0,08
Chaudière-Appalachians	356 768	5,46	2,08
Québec	586 655	8,97	1,72
Mauricie/Bois Francs	452 696	6,92	1,14
Eastern townships	257 744	3,94	0,57
Montreal	1 752 582	26,80	-0,43
Laval	284 164	4,35	5,90
Laurentians	320 066	4,89	4,03
Lanaudière	279 018	4,27	9,32
Montérégie	1 096 440	16,77	3,53
Outaouais	256 538	3,92	5,56
Abitibi-Temiskaming	147 168	2,25	0,72
North Shore	104 374	1,60	-11,80
Northern Quebec	36 112	0,55	-4,89
PROVINCE OF QUÉBEC	6 539 007	100,0	1,56

Sources: Statistics Canada, Quebec Statistics Bureau.

Labour market overview

The sound performance of the Quebec economy in 1988 had a positive impact on the labour market in all regions of the province, every one of which recorded a rise in employment and a drop or stabilization in the unemployment rate.

According to Statistics Canada's Labour Force Survey, employment growth was well above the provincial average of 2.8% in the Outaouais (7.7%), Abitibi-Temiscaming (7.5%), Gaspé-Magdalen Islands (6.2%), Eastern Townships (5.5%) and North Shore (5.1%). These regions, with the exception of the Outaouais, showed a marked turnaround from the situation in 1987, when rates ranged from -1.9% on the North Shore to 1.2% in Gaspé-Magdalen Islands and Abitibi-Temiscaming. In contrast, the performance of the Saguenay-Lac St. Jean (0.5%), Montérégie (0.9%) and Lower St. Lawrence (1.2%) regions was below the provincial average. For the latter two regions, 1988 marked a setback from 1987, when their employment growth rates had been 6.1% and 8.4%, respectively. Rates in Lanaudière (4.2%), the Laurentians (3.7%), Quebec City (3.6%), Mauricie-Bois Francs (2.8%) and Montreal Centre (2.2%) were all close to the provincial average.

Table 13

EMPLOYED PERSONS
1987-1988

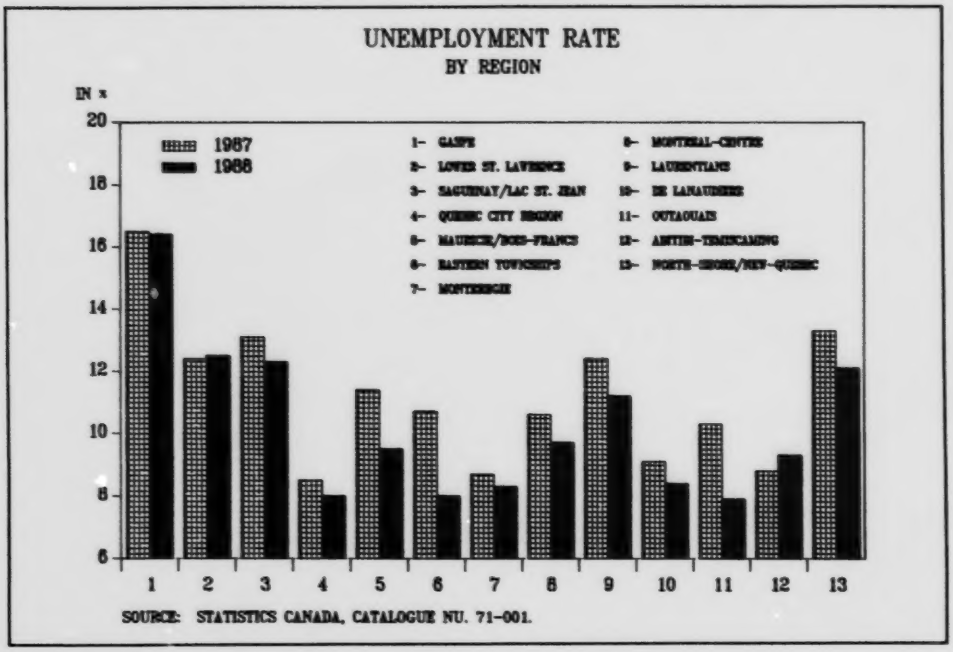
REGION	Employed (thousands) 1987	Employed (thousands) 1988	Percentage change (%) 1987-1988
Gaspé/Magdalen Islands	36	39	6,2
Lower St Lawrence	85	86	1,2
Saguenay/Lac St Jean	122	123	0,5
Quebec	412	427	3,6
Mauricie/Bois-Francs	201	206	2,8
Eastern Townships	113	119	5,5
Montérégie	527	532	0,9
Metropolitan Montreal	969	990	2,2
Laurentians	147	152	3,7
De Lanaudière	125	131	4,2
Outaouais	120	130	7,7
Abitibi-Temiskaming	61	66	7,5
North Shore/New Quebec	47	50	5,1
PROVINCE OF QUEBEC	2 966	3 049	2,8

Source: Statistics Canada, Catalog No 71-001.

Among metropolitan areas, Sherbrooke was by far the most dynamic on the job creation front in 1988, posting an exceptional growth rate of 14.5%. Next came Trois Rivières (5.6%), Hull-Gatineau (5.3%) and Chicoutimi- Jonquière (2.8%). The metropolitan areas with the highest populations, Montreal and Quebec

City, recorded growth rates of 2% and 2.3%, both below the provincial average. In the case of Quebec City, this was nevertheless a significant improvement over the 1.8% drop posted in 1987. But the growth rate in Metropolitan Montreal was only half the 1987 rate (4%), which is cause for concern in view of the fact that this area contains 45% of the population, 47% of the labour force and 46% of the unemployed in Quebec.

Graph 29



SOURCE: STATISTICS CANADA, CATALOGUE NU. 71-001.

Since 1983 the unemployment rate in Quebec has dropped steadily, and almost all regions have followed this trend. According to the Labour Force Survey, the unemployment picture improved everywhere in 1988, except in Abitibi-Temiscaming (up from 8.8% to 9.3%) and the Lower St. Lawrence (from 12.4% to 12.5%). The regions showing the greatest improvement were the Eastern Townships (down from 10.7% to 8%), the Outaouais (from 10.3% to 7.9%) and Mauricie-Bois Francs (from 11.4% to 9.5%). The Outaouais recorded the lowest rate in the province (7.9%), followed by Quebec City and the Eastern Townships (both 8%). All resource regions except Abitibi-Temiscaming posted rates above the provincial average of 9.4%, led by Gaspé (16.4%).

With the exception of the Laurentians (11.2%), rates in all central regions were near the provincial average.

Hull-Gatineau was the metropolitan area with the lowest unemployment rate in 1988 (6.2%), followed by Sherbrooke (7.1%) and Quebec City (8.4%). The unemployment rate in Metropolitan Montreal (9.3%) was slightly below the provincial average, while the rates in Trois Rivières (10.4%) and Chicoutimi-Jonquière (10.9%) were above the overall Quebec level.

Table 14

PER CAPITA DISPOSABLE PERSONAL INCOME
(Quebec=100)

REGION	Per capita disposable personal income	
	1983	1987
Gaspé/Lower St Lawrence	71,8	78,7
Saguenay/Lac St Jean	93,0	82,0
Quebec	92,7	96,7
Mauricie/Bois Francs	88,0	86,9
Eastern Townships	86,7	90,2
Montreal	107,8	106,6
Outaouais	95,2	98,4
Abitibi-Témiskaming	90,8	84,4
North Shore/New Quebec	n.d.	87,1
PROVINCE OF QUEBEC	100,0	100,0

Quebec 1983 = 9 810$; 1987 = 12 200$

Source: The Financial Post, Canadian Markets.

Investment overview

According to estimates by the Quebec Bureau of Statistics, total capital investment in Quebec should reach $27.362 billion in 1988, up 13.2% from the 1987 level.

In terms of growth rates, the best performances were seen in the resource regions. Indeed, Abitibi-Temiscaming and Saguenay-Lac St. Jean should post the largest increases in investment in 1988, with 48.7% and 32.3% respectively. Growth in the Abitibi-Temiscaming region was due primarily to hydro-electric development (from $40.9 million in 1987 to $140.6 million in 1988) and the wood industry (from $38.6 million to $88.2 million). In Saguenay-Lac St. Jean, the rise was largely attributable to capital expenditure by the aluminum industry, which climbed from $67.1 million in 1987 to $222.3 million in 1988. The Lower St. Lawrence-Gaspé region should also record a strong performance, with a projected rise of 23.8% resulting maily from wastewater treatment projects. As for the North Shore/Northern Quebec region, it recorded a 5.3% drop in investment as a result of a sharp decline in capital expenditure in the electric power and other utilities sector (from $515.1 million in 1987 to $288.1 million in 1988).

The Greater Montreal region should be able to maintain its capital expenditure growth rate (13.6%) above the Quebec average, thanks in large measure to investment in the manufacturing sector and, more specifically, increased investment in the following industries: machinery and transportation equipment (+$289.5 million), metal fabricating (+$150.8 million) and food and beverages (+$107.7 million). The Outaouais and Mauricie-Bois Francs regions should also record performances above the provincial average with respective increases of 17% and 14.4%. The rise in the Outaouais is mainly due to the tertiary sector, particularly electric power and other utilities (+$50.3 million), public administration (+$35 million), and personal, business and miscellaneous services (+$20 million). The increase in the Mauricie-Bois Francs region is also largely attributable to the tertiary sector, since manufacturing investment declined by 0.5%. The bulk of investment growth in this region stems from the electric power and other utilities sector (+$111.4 million). Capital expenditure in the Quebec City metropolitan area should rise by 8.6% in 1988, a rate below the provincial average. Contributing most to this increase were the various groups in the tertiary sector, with a sharp rise in government spending (+$86 million). Finally, the Eastern Townships should suffer a 6.9% drop in investment, largely as a result of a sharp decline in expenditure in the paper industry (-$151.7 million) following completion of the reconstruction of the Domtar complex in Windsor.

Table 15

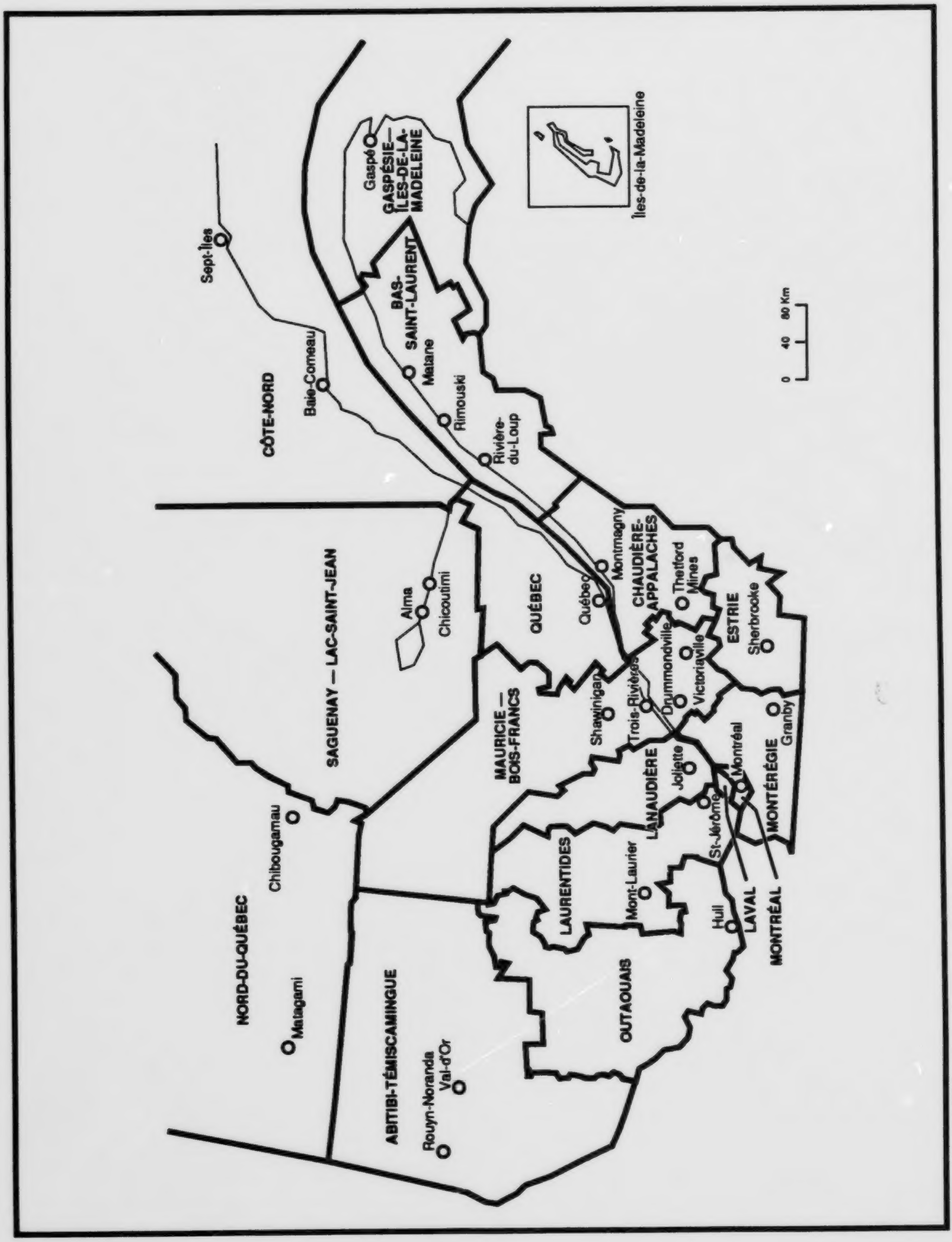
CAPITAL INVESTMENT
1987-1988

REGION	INVESTMENT					
	Total			Manufacturing		
	1987 $M	1988 $M	87/88 %	1987 $M	1988 $M	87/88 %
Gaspé/Lower St Lawrence	470	582	23,8	59	68	14,0
Saguenay/Lac St Jean	816	1 079	32,3	239	425	78,0
Quebec	3 020	3 279	8,6	443	487	9,9
Mauricie/Bois Francs	1 383	1 582	14,4	377	375	-0,5
Eastern Townships	1 119	1 042	-6,9	477	343	-28,0
Montreal	14 813	16 833	13,6	2 028	2 788	37,5
Outaouais	994	1 163	17,0	122	157	29,3
Abitibi-Temiskaming	593	881	48,7	70	206	193,7
North Shore/New Quebec	972	921	-5,3	101	129	27,7
PROVINCE OF QUEBEC	24 179	27 362	13,2	3 914	4 977	27,1

Notes: 1. Figures shown do not include investment in repair.
2. 1988: projections revised mid-year.

Source: Quebec Statistics Bureau, Public and private investment in Quebec for 1986-1988.

Map of administrative regions



NORD-DU-QUÉBEC
Chibougamau
Matagami
ABITIBI-TÉMISCAMINGUE
Rouyn-Noranda
Val-d'Or
SAGUENAY — LAC-SAINT-JEAN
Alma
Chicoutimi
CÔTE-NORD
Baie-Comeau
Sept-Îles
BAS-SAINT-LAURENT
Matane
Rimouski
Rivière-du-Loup
GASPÉSIE—ÎLES-DE-LA-MADELEINE
Gaspé
Îles-de-la-Madeleine
QUÉBEC
Québec
Montmagny
CHAUDIÈRE-APPALACHES
Thetford Mines
ESTRIE
Sherbrooke
MAURICIE — BOIS-FRANCS
Shawinigan
Trois-Rivières
Drummondville
Victoriaville
LANAUDIÈRE
Joliette
MONTÉRÉGIE
Granby
Montréal
LAURENTIDES
Mont-Laurier
St-Jérôme
LAVAL
MONTRÉAL
OUTAOUAIS
Hull
0 40 80 Km

MONTREAL METROPOLITAIN

GEOGRAPHIC AND DEMOGRAPHIC SITUATION

The Metropolitan Montreal region comprises the Island of Montreal (29 municipalities), Laval, some 20 municipalities on the northern edge of Laval included in the Laurentians and Lanaudière administrative regions, and some 40 municipalities on Montreal's South Shore included in the Montérégie administrative region. With a population of 2,921,000 in 1986, Montreal is the second-largest metropolitan area in Canada behind Toronto (3,427,000). The region contains close to 45% of the Quebec population and 11.5% of the Canadian population.

Between 1981 and 1986, the population of Metropolitan Montreal grew by 2.1%, compared with 1.6% for Quebec and 4.2% for Canada as a whole. Within the region there has been a movement from the central core to the periphery. In fact, the population of the City of Montreal (1,015,000) and the Island of Montreal dropped by 0.3% and 0.4% respectively between 1981 and 1986, while the same period saw population increases on the South Shore (4%), in Laval (5.9%) and on the North Shore (10.8%).

INDUSTRIAL STRUCTURE

Accounting for some 50% of overall employment in the province of Quebec, the Montreal region has an economic base divided between manufacturing and export-tertiary activities: transportation and communications, financial services, services to business management, head offices, tourism, higher education and specialized health services. Its economy is therefore heavily dominated by tertiary activity (72% of jobs); the great majority of service jobs, however, are in areas tied to regional consumption, such as trade and other services to the population.

As a whole, the manufacturing sector has undergone positive structural changes since the beginning of the decade. Modern industries with higher productivity, more export-oriented and employing more specialized labour, have made appreciable gains, particularly the electrical and electronic products, printing and rubber and plastics industries. If the machinery, transportation equipment and chemical products industries are added, the modern industries' share of manufacturing employment climbed from approximately 37% in 1980 to over 40% in 1988. Modern industries rely heavily on technological innovation and development.

MODERN HIGH-TECHNOLOGY INDUSTRIES

Electrical and electronic products

The electrical and electronic products industry, in full growth, accounts for 10% of manufacturing employment in Metropolitan Montreal. Over one-third of those jobs are in companies with 1,000 employees or more, among them Canadian Marconi (2,400 employees) which manufactures telecommunications systems and other electronic products, Northern Telecom (2,600 employees), which produces cables, sound and radio frequency equipment and telecommunications equipment, and CAMCO (1,200 employees), which makes washers, dryers and dishwashers. The telecommunications equipment sector is a particularly robust component of this industry in Quebec. The sector enjoys a trade balance, meaning that Quebec's production is equal to consumption in the province. Northern Telecom dominates by far, with 70% of the market. The micro-electronic sector is in a less enviable position than telecommunications equipment. Only one company in Montreal designs and manufactures semi-conductors (Technologies OMVPE). But two other companies (Helix Circuits and Circo Craft) have a solid reputation as assemblers of high-technology components (printed circuits).

Transportation equipment

The transportation equipment industry is a major factor contributing to the dynamic performance of Montreal's manufacturing sector. The industry employs over 9% of the manufacturing work force and consists mainly of very large corporations: General Motors in Boisbriand (automobiles, 4,000 employees), MCI in St. Eustache (buses, 500 employees), Pac car Canada in St. Thérèse (trucks, 800 employees), Pratt & Whitney in Longueuil (aircraft engines, 5,500 employees), Canadair in St. Laurent (business aircraft and parts, 6,200 employees), CAE Electronics (commercial and military flight simulators, air traffic control systems, 2,850 employees) and Spar Aerospace (satellite and telecommunications systems, 750 employees). The aeronautics industry is especially important in Montreal because of its capacity for innovation and excellent reputation on world markets. This industry is particularly concentrated in Montreal, where three of Canada's four largest companies are located: Pratt & Whitney, Canadair and CAE. These companies generate new technology, and their presence in Montreal benefits smaller companies and attracts them to the region. There is also considerable activity by second- and third-tier companies that is well integrated with that of the top-tier firms.

Pharmaceutical industry

The Quebec pharmaceutical industry is largely concentrated in Montreal. Close to 7,000 people work in the industry, but its real importance must be measured in terms of the high skills of its workers and the industry's R&D activity. Montreal has major assets in this sector: a large medical community, prominent universities (McGill, University of Montreal), major hospitals and research centres, and such large companies as Merck Frosst, Ayerst McKenna and Harrison, Burroughs, Abbott, Squibb, Bristol Myers, and Frank W. Horner. In the medical field alone Montreal has major institutions that are leaders in research and development. Prominent among these are the Armand Frappier Institute and the Montreal Heart Institute. Recent amendments to the Patent Act to protect drug patent rights are a further boost to R&D, but the small size of companies does not favour basic research.

Computer industry

The computer industry serves mainly to support high-technology industries and contributes to the development of primary and secondary industries. The equipment manufacturing field is not very developed in Montreal; only consulting services, specialized services and software are relatively prominent in this sector. In consulting services, several Montreal firms are well established, among them DMR Group, LGS, CGI and Atkinson, Tremblay and Associates. Companies offering specialized services (management of data processing centres and computer time-sharing) include IST and BST. The software industry is developing rapidly as a result of the many applications in high-growth industries. Most firms are still young, but some have had considerable success, for instance Infocentre with its system for travel wholesalers, MANAC Systems in the management of law offices, STS with retail chains, ICAM in computer-assisted manufacturing (CAM), and Micro Tempus in micro/mainframe computer linking systems.

Consulting engineering firms

In more general terms, services to business management and government agencies are represented mainly by consulting engineering firms, some of which have acquired international reputations. These firms offer services in areas that include engineering, accounting, computer systems, administration and management, human resources and advertising. The largest are engineering firms that operate worldwide: SNC Group (4,400 employees), Lavalin Inc. (6,000 employees) and Monenco Ltd. (6,000 employees).

HEAD OFFICES

Montreal is the site of a large number of head offices in both the manufacturing and tertiary sectors. These have a considerable multiplier effect on employment and related services as well as research activity.

In the electrical and electronic products and telecommunications industries, head offices include: Bell Canada Enterprises (12,000 employees in Montreal) and Teleglobe Canada (1,100 employees). The transportation sector is particularly well represented in Montreal: Canadian Pacific (4,300 employees in Montreal), Canadian National (5,600 employees), Air Canada (500 employees), CSL Group Inc. (shipping and trucking, 1,000 employees), Bombardier-Canadair (transportation equipment, 7,500 employees) and Via Rail Canada Inc. (900 employees).

Most manufacturing industries are represented by head offices in Montreal: Domtar (1,200 employees) and Consolidated Bathurst (1,400 employees) in the paper industry, Dominion Textile Inc. (900 employees) and Consoltex (500 employees) in the textile industry, Culinar (1,400 employees) and Coopérative Fédérée du Québec (300 employees) in the food industry, Alcan Aluminum Ltd. (700 employees in Montreal), Sidbec-Dosco Inc. (1,000 employees) and QIT Inc., (65 employees) in primary metals, Imasco Ltd. (tobacco industry, 1,400 employees) and Johnson and Johnson Inc. (surgical, first aid and domestic cleaning products, 1,000 employees).

The tertiary sector is well represented by banking and financial services: Royal Bank of Canada (3,700 employees), Bank of Montreal (4,400 employees), National Bank of Canada (7,000 employees), Montreal Trust (500 employees), Laurentian Bank (900 employees), and General Trust of Canada (400 employees).

There are also a number of major trade-sector head offices in Montreal: Steinberg Inc. (4,500 employees), Provigo Inc. (1,000 employees), Reitmans (Canada) Ltd. (700 employees), Henry Birks and Sons Ltd. (200 employees), Dalmys Canada Ltd. (clothing, 300 employees) and U.A.P. Inc. (automobile accessories, 600 employees).

Finally, utilities are represented by Hydro Quebec (6,700 employees in Montreal) and Gaz Métropolitain (1,300 employees).

Several international agencies are headquartered in Montreal. The most prominent are the International Air Transport Association (IATA, 80 employees) and the International Civil Aviation Organization (ICAO, 150 employees).

TRADITIONAL SECTORS

Alongside the modern, high-growth manufacturing sector, there remains a sizeable segment (25% of manufacturing employment) in the so-called traditional sector. These traditionally important industries remain major manufacturing employers: food and beverages, tobacco, furniture and textile-clothing-leather (TCL) account for more than one-third of manufacturing jobs.

Montreal and its metropolitan region are the main centre of TCL activity in the country, concentrating over one-third (65,000) of Canadian employment in these industries; these account for over one-fifth of manufacturing employment in the region. More than 80% of jobs in this sector are in companies with under 200 employees, though a number of large firms, including Algo Group and Peerless Clothing, are also present.

The second-largest group in the traditional sector after TCL is food and beverages, which provides some 34,000 jobs, or 11% of all manufacturing jobs in Montreal. This sector includes several large corporations such as Kraft (2,000 employees) and the O'Keefe, Labatt and Molson breweries (each with over 1,000 employees).

The other traditional manufacturing industries (tobacco and furniture) account for 14,000 jobs, or 4.5% of total manufacturing employment in Metropolitan Montreal. A feature of the tobacco industry is the large size of its companies: 2,000 jobs at R.J.R. Macdonald and Imperial Tobacco, representing 75% of all jobs in the industry. In contrast, the furniture industry is composed of much smaller companies: 48% of jobs are in firms with under 50 employees.

RESEARCH AND DEVELOPMENT

Montreal has the advantage of being the site of numerous private, government and institutional research centres. They provide effective support for industrial and tertiary activities in the region and are essential to the development of rapid-growth high-technology companies.

Several private companies have their own research centres. Pratt & Whitney runs the largest, with some 1,500 employees. This centre carries out general and applied research in connection with aircraft engines. The Marconi research centre specializes in navigation, detection and flight management systems (avionics) and employs 350 people. In the pharmaceutical field, Bio-Research employs 345 people to conduct pre-clinical and chemical safety tests on behalf of various companies. For its part, Canadair does research on various aircraft types and surveillance systems (325 employees). The Pulp and Paper Research Institute of Canada (PAPRICAN, 320 employees) concentrates on the development of new pulp and paper products and manufacturing processes. In the area of electronic and telecommunications equipment, Bell Northern Research (284 employees) and Northern Telecom (188 employees) conduct research on telecommunications, operation of networks and development of communication products and processes. Other major research facilities, such as those of Spar Aerospace (170 employees), CAE Electronics (155 employees), Philips (150 employees, microcomputer design) and Merck Frosst (120 employees, basic research on drugs) are also located in the Metropolitan Montreal region.

Government research facilities complement private-sector centres and provide them with significant support. They include the Biotechnology Research Institute (52 employees), which helps companies to become more competitive by applying the biological sciences to industry. Others of note are the Canadian Workplace Automation Research Centre (41 employees), the Transportation Development Centre (51 employees), the Hydraulics Research Centre (8 employees) and the Industrial Materials Research Institute (112 employees). This last institute conducts research into industrial materials and techniques, for instance on corrosion, welds and joints, tribology and casting techniques.

Provincially-funded facilities include the Quebec industrial research centre (CRIQ, 242 employees), which helps to develop and adapt technology for the Quebec manufacturing sector. The Quebec minerals research centre (CRM) works to develop the mining industry. Others are the Quebec occupational health and safety research institute (IRSST, 71 employees) and especially the Quebec electricity research centre

(IREQ, 518 employees), one of the most complete hydro-electric research facilities in North America.

There are also a number of research centres that are subsidized but not directly operated by government. Worthy of mention are the Canadian Institute of Mining and Metallurgy (production and use of metals and minerals); the Forest Engineering Research Institute of Canada (studies of roads and bridges, mechanization of silviculture, logging, use of wood residues and laser cartography); the Telematics Technology Centre (development of new techniques and new processes to collect, manage, transmit and retrieve data and information; and the Société de recherche bio-industrielle, a bio-industrial research corporation located in Laval in a bioscientific and industrial complex that also houses the Armand Frappier Institute (application of biotechnology in medicine).

Income

Per capita personal disposable income in Metropolitan Montreal is more than 10% above the provincial average. Although close to the Canadian average, it lags 12% behind the level in Metropolitan Toronto. The highest income levels are found on the Island of Montreal, even though there are substantial gaps between the City of Montreal, the metropolitan region and the province of Quebec: the median income of households in Montreal in 1985 stood at 74% of the median income in Metropolitan Montreal and 78% of the provincial level. In this respect, the median income level in the City of Montreal is comparable to that of the poorer regions of Quebec.

Investment

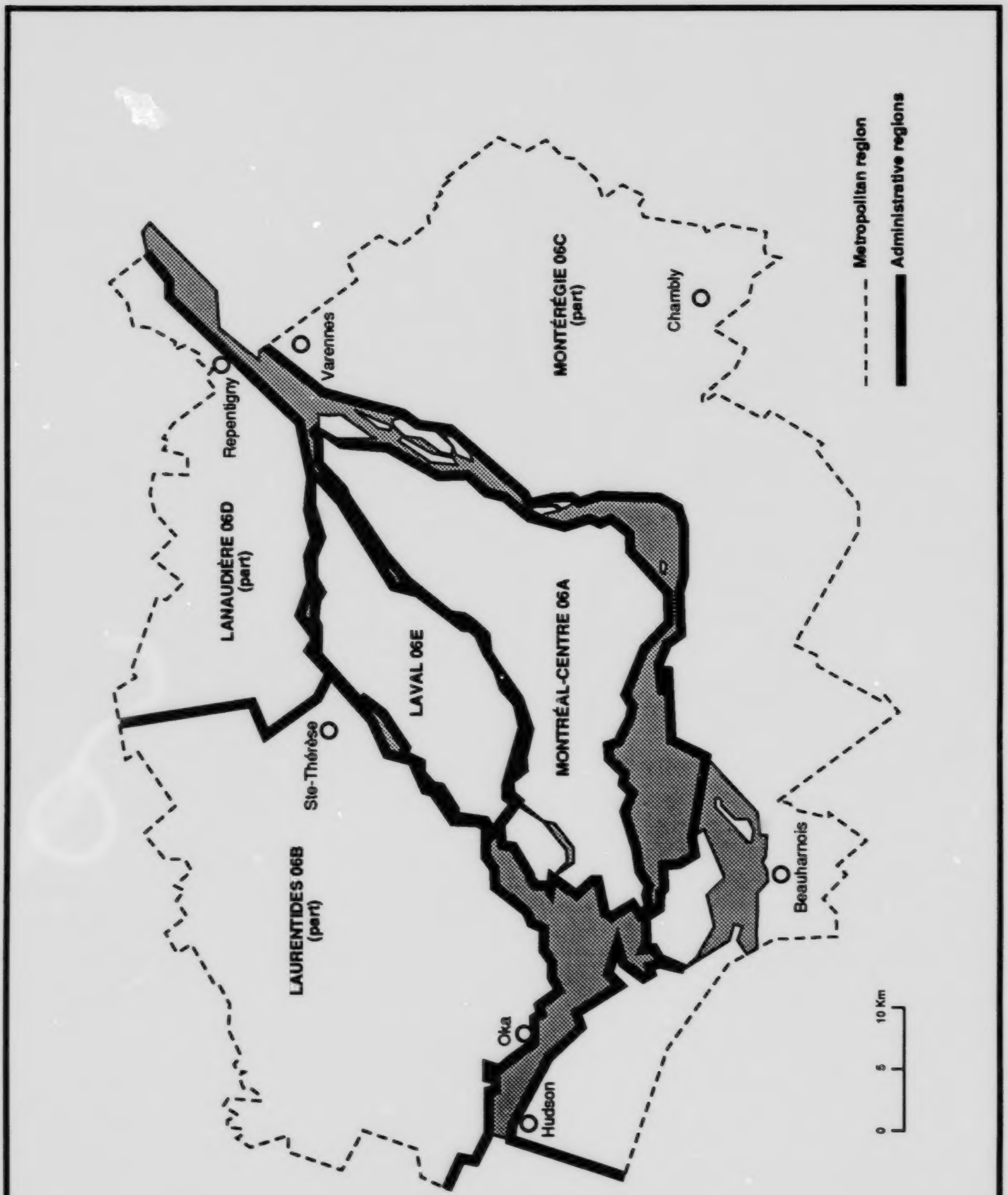
Growth in manufacturing investment in Metropolitan Montreal was particularly strong in 1988 (+36.7%). The level of capital expenditure ($1.8 billion) was the highest ever recorded in Montreal. The largest project is certainly the General Motors plant in Boisbriand, involving total investment of more than $450 million. The pharmaceutical company Merck Frosst has also announced spending of over $200 million, including $50 million in capital investment and $150 million in R&D over five years. Several smaller projects are also worth noting: Nordic Laboratories in Laval ($53 million, including $43 million in R&D over five years), Noranda in Montreal East ($46 million, modernization of a copper refinery), Shell ($80 million, refinery modernization), Kemtec ($40 million, petrochemical plants: cumene and paraxylene), Miron ($39 million, cement works) and Matrox ($15 million, electronic components).

Commercial construction continues to be very active in the Montreal region despite the completion of several major projects: Cours Mont-Royal ($155 million), the Coopérants building and the Promenade de la Cathédrale ($140 million) and Place Montreal Trust ($125 million). Other projects have yet to be completed: the World Trade Centre ($150 million), the Ultramar head office building ($30 million) and the Eaton Centre ($60 million). Finally, two major projects were unveiled in 1988: the IBM-Marathon building ($200 million) and the Provevco-Lavalin building ($135 million). Also announced were a road modernization program costing an estimated $1.6 billion over 10 years, and work on the Old Port ($100 million). Capital investment projects by institutions and governments include: the renovation of air terminals at Mirabel and Dorval ($51 million), UQAM ($39 million), a maintenance centre at Mirabel airport ($30 million), the Musée d'art contemporain ($60 million) and the Anna Laberge hospital in Châteauguay ($45 million).

Labour market

Employment grew less rapidly in Metropolitan Montreal in 1988 (2%) than in the province as a whole (2.8%). The number of new jobs in Montreal represented only 35% of the total number of new jobs in Quebec, even though the region accounts for 47% of employment in the province. Moreover, the unemployment rate dipped only marginally between 1987 and 1988, from 10% to 9.3%, compared with an overall rate of 9.4% for Quebec. However, Montreal's unemployment rate was 2.5 times higher than the rate in Metropolitan Toronto (3.7%). The participation rate in Montreal (66.1%) was slightly above the Quebec average, but suffered a small setback in relation to the previous year and remained 5.5 points below the Metro Toronto rate (71.6%).

Metropolitan Montréal


Metropolitan region
Administrative regions
MONTÉRÉGIE 06C (part)
Chambly
Varennes
Repentigny
LANAUDIÈRE 06D (part)
LAVAL 06E
MONTRÉAL-CENTRE 06A
Ste-Thérèse
LAURENTIDES 06B (part)
Beauharnois
Oka
Hudson
0
5
10 Km

LAURENTIDES

The Laurentians region lies northwest of Montreal, north of the Thousand Islands River between the Lanaudière and Outaouais regions, and is bounded on the north by the Mauricie Region. The population of the administrative region stood at 320,000 in 1986, including 153,000 in the Montreal metropolitan area. Outside the Montreal area, the Laurentians region, with the exception of St. Jerome (pop. 44,000), contains only secondary centres: Lachute (11,600), Mont Laurier (8,000) and St. Agathe des Monts (8,000).

The population of the Laurentians grew by 1.6% between 1981 and 1986 (matching the rate for Quebec as a whole). If the area within Metropolitan Montreal is added, however, the population growth was 4%. The community of St. Jerome was responsible for one-half of the rise in population in the non-metropolitan part of this region. The population of other communities remained stable or declined. The rural areas around St. Agathe des Monts and Mont Laurier recorded population increases.

The primary sector accounts for barely 4% of total employment in the region. Agriculture is by far the most important activity, with mining holding only a marginal position. Quarrying (stone, sand and gravel) is the main mining activity, in addition to a magnesian limestone mine in Grenville, the only mined deposit of this industrial mineral in Canada. Agriculture, though more important than mining, does not predominate. The surface area of farms in the region represents only 2.8% of Quebec farmland, and most of the farms are concentrated in the southwest corner of the region in the RCMs of Argenteuil, Mirabel and Two Mountains. Dairy production, fruit and vegetable farming and cattle are the main activities of farms in the region.

There are over 23,000 jobs in the community of St. Jerome (which comprises some 10 municipalities in addition to St. Jerome itself), of which 74% are in the tertiary sector (71% overall in Quebec) and 22% in manufacturing (19% in Quebec). Manufacturing is fairly diversified and consists mainly of small companies. The two main industries are paper (Rolland Inc., 15% of manufacturing employment) and transportation equipment (Woodbridge, 15%). The traditional textile-clothing industries play a prominent role, with 16% of manufacturing employment. They are followed by electrical and electronic products (9%), wood (8%), food and beverages (7%) and metal products (6%). St. Jerome, gateway to the Laurentians tourist area, has a relatively large tertiary sector. The presence of major utilities, such as Bell Canada (480 employees) and Hydro Quebec (735 employees), the strength of wholesale and retail trade and the size of medical institutions (St. Jerome hospital, 1,535 employees) are the main reasons for the development of this sector.

The economy of the Lachute community is largely industrial, with manufacturing accounting for one-third of employment in the area; 25% of manufacturing jobs are in the chemical industry (mainly at C X A in Brownsburg). Next, in order, are the following industries: non-metallic minerals (21%, mainly at Canadian Refractories and Great Lakes Carbon Canada) and paper (11%, Price Wilson). The tertiary sector is almost totally geared to the local population, and no single employer has more than 500 employees.

Economic activity in the St. Agathe community is based primarily on tourism, with manufacturing holding only a marginal place. Manufacturing provides under 800 jobs, or less than 10% of total employment in the community. The wood, clothing and furniture industries account for 62% of all manufacturing jobs. The tertiary sector, because of tourism, plays a major role in the region: 85% of total employment, compared with an average of 71% for Quebec. The presence of major tourist centres, numerous accommodation facilities and many secondary residences give considerable vitality to tertiary activities. Other services of note in the employment structure of the region are health care (1,200 employees) and education (1,000 employees).

Forestry is the basis of the economy in the community of Mont Laurier. In addition to logging, there are several processing industries (wood and furniture). Manufacturing is poorly diversified and employs just over 10% of the local labour force. More than 67% of manufacturing jobs are in the processing of forest products: Bellerive Ka'N'Enda Wood Products (140 employees); MacLaren Forest Products (120 employees); and Panfibre (91 employees). The food and beverage industry ranks second, with 15% of manufacturing employment. The tertiary sector is relatively large large in Mont Laurier, with 72% of total employment (vs. 71% in Quebec). The principal employer is trade (26% of tertiary jobs), followed by health care services (21%) and accommodation and food services (14%).

Income

Per capita personal disposable income in the Laurentians ($11,440) stands at 94% of the Quebec average. There is a substantial gap between the communities in the southern part of the region ($11,500) and the less urbanized area around Labelle ($9,000), where economic activity is less strong and the unemployment rate higher.

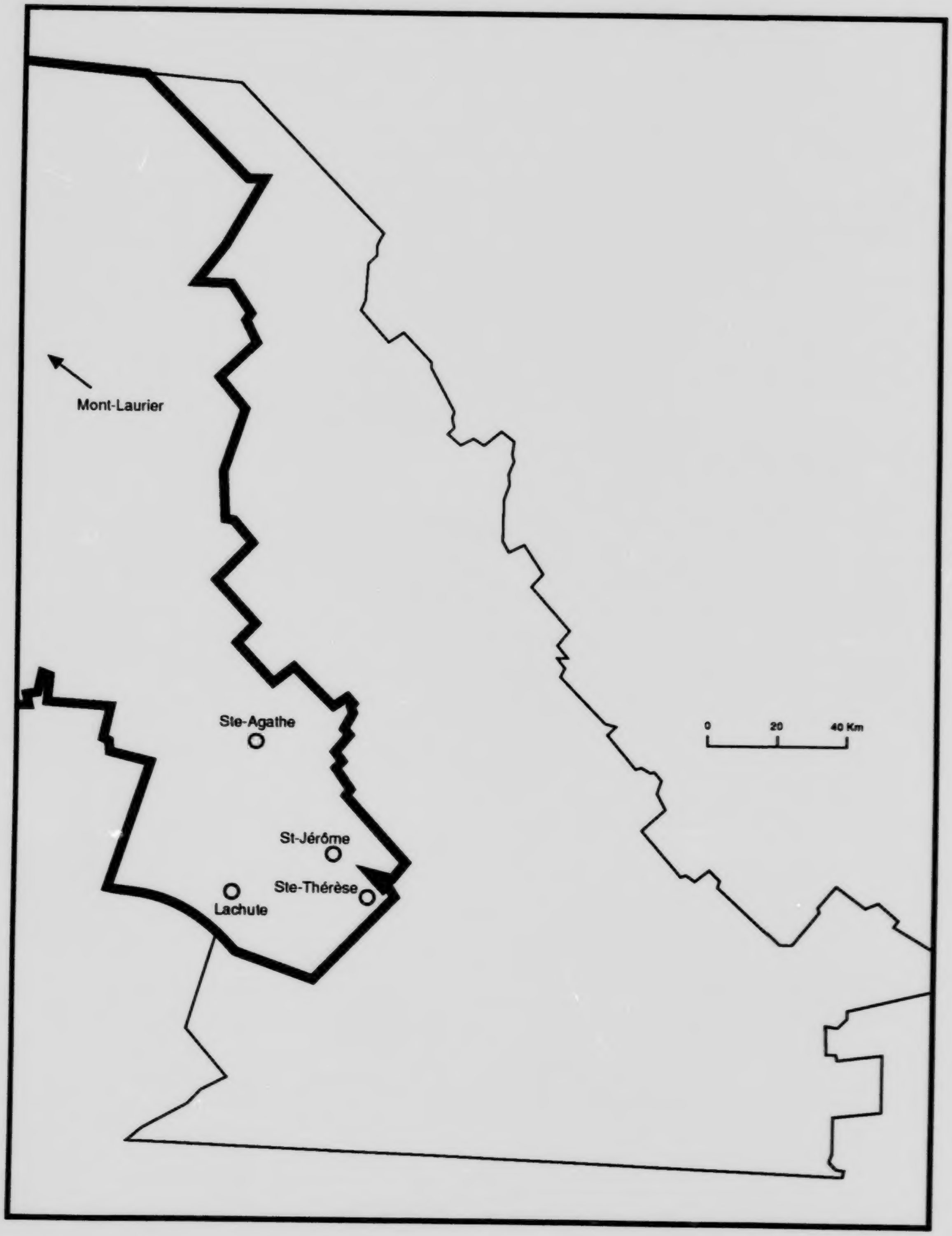
Investment

Capital investment in the Laurentians is tied mostly to tourist facilities and the secondary housing market. Several residential projects (many of them condominiums) are planned in St. Adèle (three projects for a total of $47 million), St. Sauveur (one project costing $7 million) and Mont Rolland (1 project costing $20 million). Construction has also begun on a $10- million shopping centre at St. Sauveur.

Labour market

According to the Labour Force Survey (LFS), employment grew sharply in the Laurentians administrative region in 1988. Indeed, the number of persons employed rose by 3.7% in 1988, compared with 2.8% in Quebec as a whole. The unemployment rate therefore fell from 12.4% in 1987 to 11.2% last year.

06B - Laurentides


Mont-Laurier
Ste-Agathe
St-Jérôme
Ste-Thérèse
Lachute
0
20
40 Km

MONTEREGIE

The Montérégie region is located east of the Island of Montreal and extends from Sorel to the U.S. border, and from the St. Lawrence to Granby. This administrative region covers part of Metropolitan Montreal (South Shore), where the majority of the regional population is concentrated. Montérégie had a population of 1,096,400 in 1986, including 605,000 in the Metropolitan Montreal region. This region is the most highly populated in the province after Montreal Centre. Aside from the portion of the Montérégie administrative region that overlaps with Metropolitan Montreal, the main communities are: St. Jean sur Richelieu (60,000), Granby (51,200), St. Hyacinthe (48,300), Sorel (46,100) and Valleyfield (38,800).

Excluding the area that falls within Metropolitan Montreal, the population of Montérégie increased by 2.9% between 1981 and 1986 (vs. 1.6% in Quebec). The Granby census agglomeration recorded the largest increase (6.3%), followed by St. Jean sur Richelieu (3.1%) and St. Hyacinthe (1.8%). The agglomerations of Valleyfield and Sorel recorded drops of 1.8% and 2% respectively.

Primary activity in the region is limited almost exclusively to farming and some mining. Roughly 4% of the labour force works in the primary sector, in nine out of ten cases in agriculture. Farms in the region cover close to 20% of the province's total farmland, but cultivated farmland represents 28% of the Quebec total. In recent years there has been a shift away from dairy farming to hog farming and fruit, vegetable and grain crops.

There are over 27,000 jobs in the community of St. Jean sur Richelieu, 28% of them in manufacturing. The principal manufacturing industries are: textile-clothing (26% of manufacturing jobs) and electrical products (16%). The transportation equipment industry has made great strides with the arrival of Oerlikon (575 employees). The large size of the tertiary sector in the region is attributable in part to public administration, because of the presence of the Canadian Forces Base (1,050 employees). The community also serves a wide area in terms of retail trade, education and health care.

The community of Granby-Bromont is the most heavily industrialized in the Montérégie region. Fully 44% of jobs are in manufacturing, compared with an average of 25% in the region as a whole.

The most prominent industry is that of electrical and electronic products, with 22% of total manufacturing employment. IBM (1,500 employees), Mitel (250) and Circo Craft (205) are the largest employers. Following start of production at Hyundai (500 employees at present and 1,500 eventually) and the construction of an aircraft engine parts plant by CGE (600 employees in total), the transportation equipment industry will show up predominently in this region. The textile and clothing industry accounts for 20% of manufacturing employment, while metal fabricating and plastics each represent 10% of industrial jobs. The tertiary sector is relatively modest, with less than 50% of total employment. Trade, education and health care account for the bulk of tertiary employment in the community.

The agri-food sector provides almost 20% of all jobs in the St. Hyacinthe area and over 30% of manufacturing jobs. Associated with this industry are a number of training institutions (Faculty of veterinary medicine) and research facilities (Agriculture Canada's veterinary pathology laboratory, the animal pathology laboratory of the Quebec Department of Agriculture, Fisheries and Food, and the Quebec Artificial Insemination Centre). The textile-clothing industry, formerly the largest employer in the region, still provides 22% of manufacturing employment today. The remainder of manufacturing jobs are divided among a wide variety of industries: paper and printing (12%), furniture (7%), metal fabricating (6%), wood (5%), machinery (3.5%) and plastics (3%). The tertiary sector provides over 55% of jobs in the region. The presence of head offices of financial institutions (Groupe Commerce, La Survivance and Fédération régionale des Caisses populaires de Richelieu-Yamaska), the strength of retail trade and the presence of regional educational and health care institutions are the main features of this sector.

The Sorel region is distinguished by its large manufacturing sector (39% of total employment) and the substantial size of its companies. The four firms with 500 or more employees account for 65% of overall manufacturing employment. Relatively concentrated, manufacturing jobs are found almost exclusively in primary metals (QIT and Atlas Steel, 50% of manufacturing employment), transportation equipment (MIL, 16%) and machinery (Beloit, 10%). The textile and chemical industries are also well represented. The decision by MIL Davie to abandon shipbuilding and convert its shipyard to build turbines for hydro- electric power stations will require the company to undergo major restructuring. The Sorel community also stands out by the small size of its tertiary sector, largely attributable to its limited radius of influence.

Manufacturing employment in the community of Valleyfield accounts for 37% of overall employment. The largest industries are rubber (mainly Goodyear, 25% of manufacturing jobs), chemicals (Expro, 21%) and primary metals (Canadian Electrolytic Zinc, 14%). The textile, food and metal fabricating industries also claim a relatively large share of regional employment. The tertiary sector employs 55% of the total labour force (71% in Quebec), primarily in health care and trade.

Income

Per capita personal disposable income in the Montérégie region is slightly higher than the Quebec average (+2.5%). The portion of the region that falls within Metropolitan Montreal enjoys per capita personal disposable income considerably higher (18%) than the rest of the region. By major urban area, income levels range from 97% of the Quebec average in Sorel to 92% in Valleyfield.

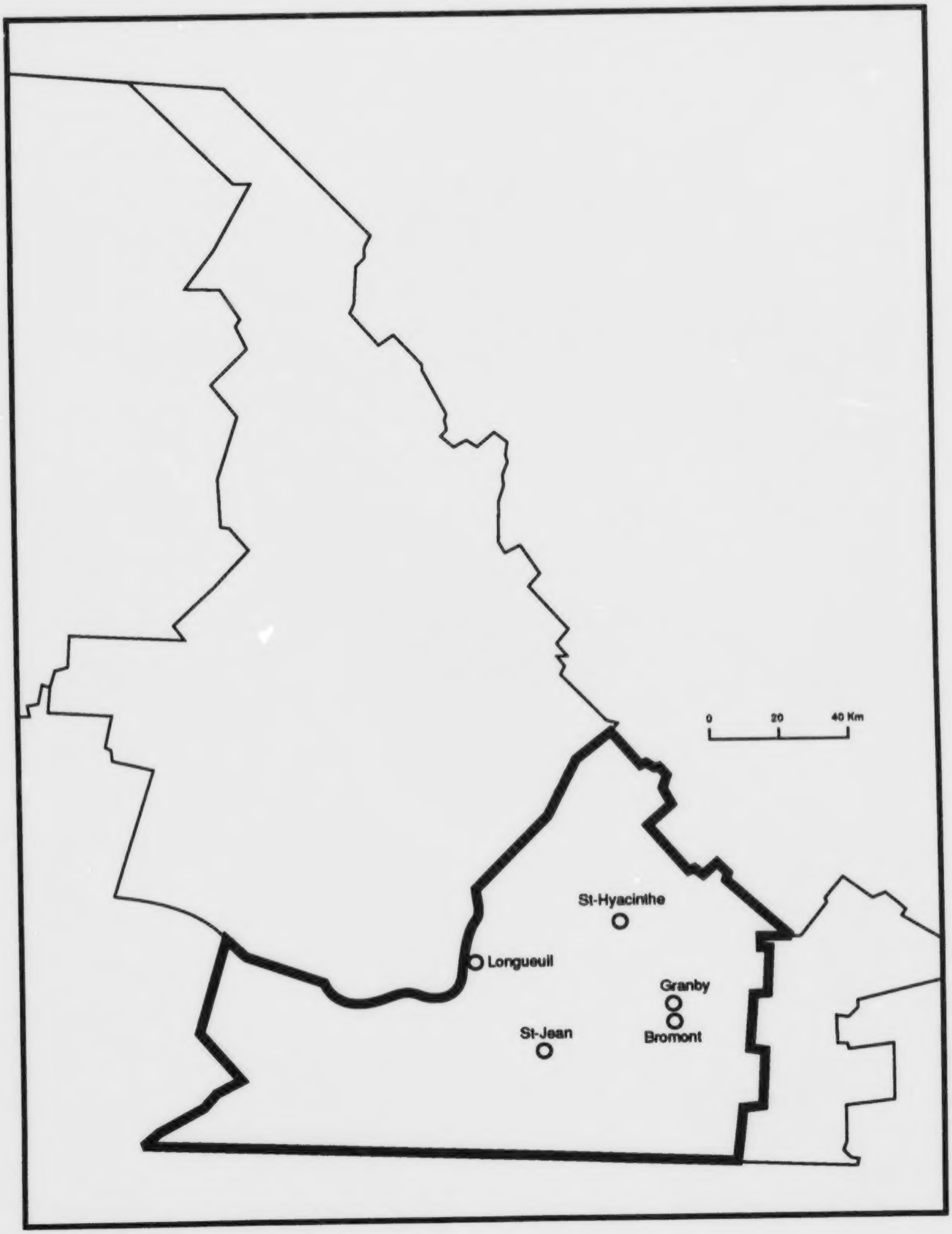
Investment

The principal beneficiaries of manufacturing investment in 1988 were the areas of Granby-Bromont, Valleyfield and Sorel: Hyundai is completing the construction of its $300 million plant in Bromont; IBM is investing $80 million in Bromont to purchase equipment and expand its integrated-circuit plant; also in Bromont, General Electric will spend $40 million to increase the capacity of its existing facilities; in Valleyfield, Canadian Electrolytic Zinc is expanding its plant at a cost of $140 million; Montupet is building a $110-million plant in Rivière Beaudette to manufacture auto parts; QIT is investing $65 million in Tracy for wastewater treatment; and finally, Oerlikon is expanding its plant in St. Jean sur Richelieu at a cost of $33 million. In the trade sector, construction of a $50-million shopping mall in Sorel and a $40-million conference centre in Valleyfield has been announced. A major $80-million housing project is planned in Granby.

Labour market

According to the Labour Force Survey (LFS), growth in employment in the Montérégie region in 1988 was the lowest in Quebec after Saguenay-Lac St. Jean. Indeed, employment rose by a mere 0.9%, compared with 2.8% for Quebec as a whole. Despite this modest growth, the number of unemployed fell slightly and the unemployment rate dipped from 8.7% to 8.3%, mainly as a result of a drop in the participation rate. The unemployment rate is among the lowest of any region in Quebec.

06C - Montérégie


St-Hyacinthe
Longueuil
Granby
Bromont
St-Jean
0
20
40 Km

LANAUDIERE

The Lanaudière region is situated north of Montreal between the Laurentians and Mauricie regions. The entire southern part of this administrative region falls within the Metropolitan Montreal region. The total population of the region was 279,000 in 1986, including 126,000 in Metropolitan Montreal. Besides the municipalities in Metropolitan Montreal, the principal communities are Joliette (pop. 35,000), Rawdon (5,700), St. Gabriel (5,000) and Berthierville (3,800).

The population of the Lanaudière administrative region (including Montreal) increased by 9.3% between 1981 and 1986 (1.6% in Quebec as a whole). Whitout the portion of Metropolitan Montreal, population growth was 4.7%. The bulk of this increase was concentrated in the rural municipalities of the Montcalm census division and north of the Joliette census division. Population growth was largely due to the heavy migration of people, many retired, to these resort areas. The population of Joliette, meanwhile, rose by only 1.5% between 1981 and 1986. Rawdon and St. Gabriel grew by 5.6% and 2% respectively, while Berthierville lost 5% of its population during the same period.

The primary sector employs less than 5% of the labour force in the region. Agriculture is by far the major activity, with mining limited exclusively to construction materials (stone, sand and gravel). The Lanaudière region contains close to 4% of Quebec farmland. Close to half of all the farmland is in the regional county municipality (RCM) of Autray, in the eastern part of the region. Dairy production is the primary activity, and some fruit and vegetable farming is done in the l'Assomption RCM. Hog and poultry farming and tobacco growing also bring substantial revenue to the region.

There are close to 34,000 jobs in the community of Joliette, which includes, in addition to Joliette itself, some 40 municipalities. The agri-food sector is an important component of the regional economic base, accounting for some 40% of the 10,900 primary and manufacturing jobs. Four large companies, namely Firestone (875 employees), Scott Paper (750 employees), St. Lawrence Cement (230 employees) and the Abex foundry (290 employees) provide close to one-third of manufacturing jobs. The remaining manufacturing jobs are in small and medium-size businesses, mainly in food and beverages (15% of manufacturing jobs), clothing (12%) and wood (12%). Joliette is a major centre for trade as well as education and health care services, with such institutions as the Collège de Joliette (500 employees) and especially the Centre hospitalier régional de Lanaudière, a hospital with 2,400 employees, making it the largest employer in the region. Together, government and parapublic services account for one- quarter of all jobs in the region.

The economy of Rawdon is based mainly on tourism and services to the population of the surrounding municipalities. Manufacturing is very limited. Resort activities and tourism are thus the economic cornerstones of this community in the Lower Laurentians. There are over 2,000 secondary residences in the community, providing a major economic boost to trade, restaurants and other local services. Local manufacturing employs some 200 people, the majority (57%) in the plastics industry.

St. Gabriel de Brandon is located in a resort area north of Joliette. As in Rawdon, resort activities and tourism are of prime importance to the area. There are close to 1,000 secondary residences on the 12-kilometre shoreline of Lake Maskinongé. St. Gabriel has five hotels and many restaurants serving temporary residents and tourists. Agriculture also plays a significant role. The principal activities are poultry farming and dairy production. Finally, a dozen small manufacturing firms employ some 170 people. Close to 85% of those workers are employed making furniture and other wood products.

The economic structure of the community of Berthierville is heavily geared to manufacturing (28.3% of overall employment vs. 20% for Quebec). Agriculture also plays an important role in the surrounding area. Because of the proximity of Montreal and of centres such as Joliette and Trois Rivières, the area's tertiary sector is not very developed. There are six major industries in the community. Clothing continues to rank first, with over 25% of manufacturing employment, but the food industry is also sizeable (19% of manufacturing jobs), followed by wood (14.5%), metal fabricating (12.4%), furniture (12.4%) and electrical products (7%). The tertiary sector employs only 48% of the labour force in the community (vs. 71% in Quebec). Trade is the largest tertiary activity (29% of tertiary jobs), followed well behind by education (16%), health care (15%) and accommodation and food services (13%). The only large employer in the tertiary sector is the Berthier-Nord- Joli school board (close to 500 employees).

Income

Per capita personal disposable income in the Lanaudière region ($11,250) stands at 92% of the Quebec average. Incomes are higher in the Joliette community ($11,800) and the l'Assomption census division ($11,700) than in Berthier ($10,300) and Montcalm ($10,000).

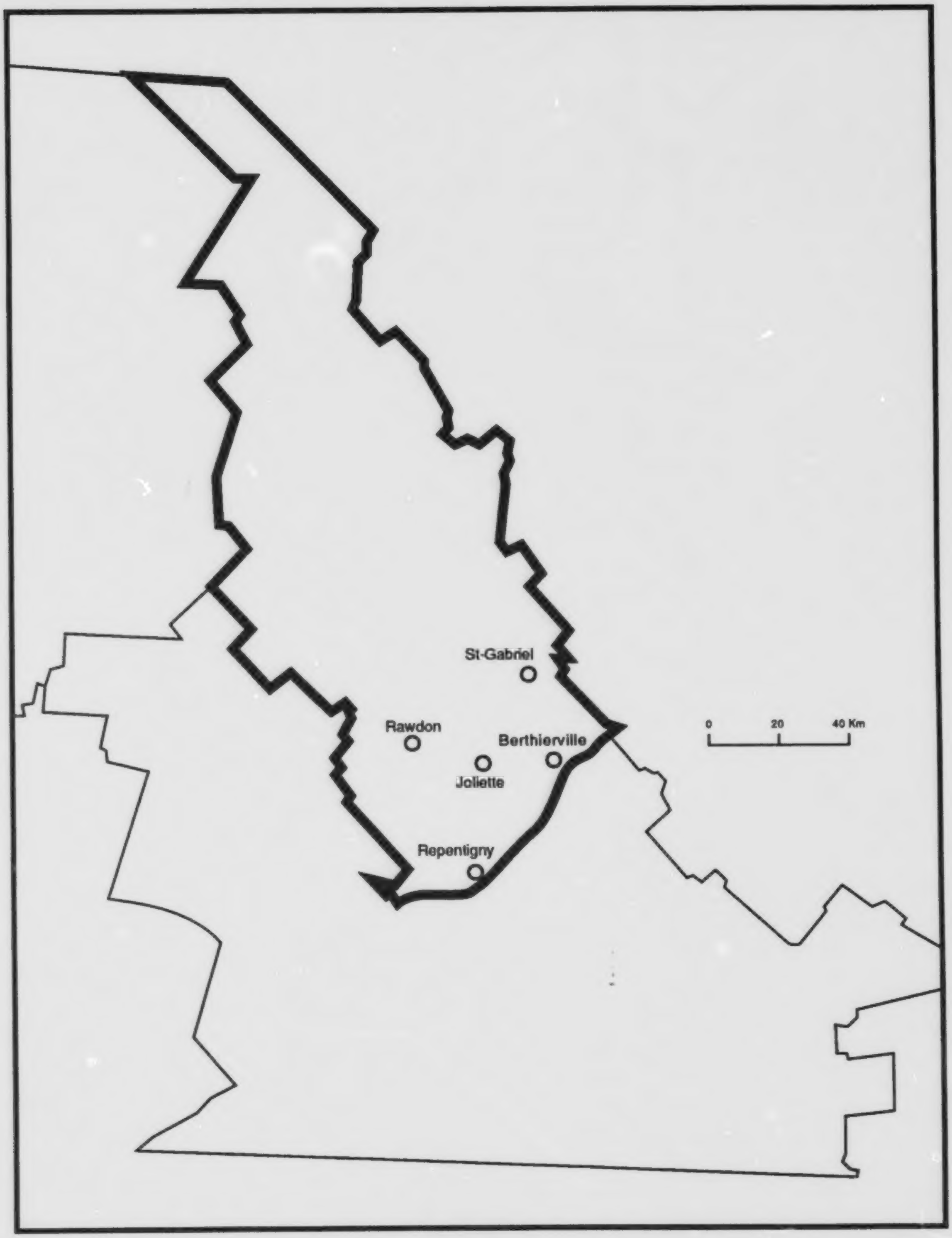
Investment

Most capital investment in 1988 involved manufacturing projects. Lanofor recently completed construction of a waferboard plant in St. Michel des Saints ($60 million). Scott Paper is currently building a plant in Crabtree, near Joliette, at a cost of $40 million. Two projects stand out in the Berthierville area: Matraplast Plastics is investing $6 million, while Uniboard Canada has announced construction of a decor paper plant at a cost of $80 million. The latter project will lead to the creation of 143 jobs.

Labour force

The number of persons employed rose sharply in the Lanaudière administrative region in 1988 (4.2%), compared with Quebec as a whole (2.8%). As a result, the region's unemployment rate fell from 9.1% in 1987 to 8.4% in 1988 (vs. 9.4% in Quebec).

06D - Lanaudière


St-Gabriel
Rawdon
Berthierville
Joliette
Repentigny
0
20
40 Km

QUEBEC/CHAUDIERE APPALACHES

There were just under one million people (943,400) living in the greater Quebec City region in 1986, or 14.4% of the provincial population. Almost two-thirds (63%) of the region's population is concentrated in the metropolitan area around Quebec City, the provincial capital (pop. 603,300). The other principal communities in the region are Thetford Mines (31,900), St. Georges (21,000) and Montmagny (12,000).

The population of Metropolitan Quebec City rose by 3.3% between 1981 and 1986, while it dipped by 0.8% in the rest of the region, for an overall growth rate of 1.8% (vs. 1.6% in the province as a whole). Population growth in Metropolitan Quebec City was barely more than one-half the rate recorded between 1976 and 1981, partly due to slower growth in government and related services. Thetford Mines lost 6.5% of its population between 1981 and 1986 following heavy layoffs in the asbestos industry. St. Georges, capital of the Beauce, saw its population grow by close to 9% thanks to industrial growth in this sub-region.

Metropolitan Quebec City area

The economy of Metropolitan Quebec City is heavily dominated by tertiary activity (85% of jobs). Public administration is the principal component of the area's economy, with 43,000 jobs (16% of the total), including over 30,000 in provincial administration and roughly 11,000 in federal administration (including the armed forces base at Valcartier). The presence of five CEGEPs and Laval University makes this an important centre of post-secondary education. The university (32,000 students, 3,900 employees) is the largest employer after the provincial and federal governments. The area is also a major medical centre with 25 hospitals, of which the six largest have over 1,000 employees each. One out of five jobs is in education (21,500) or health and welfare services (31,900). Government and other public services thus account for more than one-third (36%) of employment in the community.

As the commercial hub of the region, Metropolitan Quebec City has a highly developed trade sector, including several shopping malls that attract consumers from the entire region. There are also a large number of wholesalers and distribution centres serving eastern Quebec. Overall, trade provides 47,000 jobs, or 18% of employment in the metropolitan area.

Quebec City is also a financial centre thanks to the presence of the head offices of Mouvement Desjardins (more than 2,500 jobs in Lévis) and some 15 insurance companies (3,500 jobs). The finance, insurance and real estate sector provides 16,000 jobs (6% of the total). Tourism is a important component of the regional economy. Quebec City and the surrounding area offer major tourist attractions such as Old Quebec, recognized by UNESCO as a world heritage site, and four ski resorts including the famous Mont St. Anne. Over 3.7 million tourists visited the capital in 1986, injecting $559 million into the local economy. Over 40% of visitors came from abroad, mainly the United States (29%). Accommodation and food services provide jobs for 17,800 people (7% of total employment). Metropolitan Quebec City is a hub for air, marine, road and rail transportation in eastern Quebec. The port, open year-round, specializes in the transshipment of bulk cargo, including petroleum products (44% of the tonnage handled in 1987), grain (36%) and iron ore (19%). The airport is, for communities farther east, a major connecting point for travel to Montreal, the rest of Canada and Europe. Overall, the transportation and communications sector provides 17,000 jobs (6% of the total).

The manufacturing sector accounts for roughly 10% of jobs in the community. One-third of manufacturing plants and jobs are in the food, printing and publishing and pulp and paper industries. Twelve large companies concentrate over one-quarter of jobs in the sector: Daïshowa Paper (formerly Reed, 1,560 employees in 1987), MIL-Davie (shipbuilding, 1,050), Journal le Soleil (newspaper, 715), Rothmans Benson & Hedges (620), Price (specialty papers, 450), IVI Inc. (munitions, 400), Daisyfresh Creations (foundation garments, 400), Lambert Somec (sheet metal work, pipe, 350), Bastien (footwear, 305), General Electric (electricity meters, controls and measuring instruments, 305), Journal de Québec (newspaper, 250) and Ultramar (270).

There are also some 30 high-technology companies, among them Bomem (spectrometers, spectrophotometers, 150 employees in 1987), Lab-Volt (power supplies, educational and laboratory equipment, 95), Gentec (control systems, simulators, lasers, electro-optics, 90), Tecrad (quality control equipment, 90), National Telesystem (amplifiers, intercom systems, 75), DAP Electronics (back-up warning alarms for trucks, portable microcomputers, etc, 70), Consulab (electronic sensors, teaching equipment, control panels and systems, etc., 35), and Becterm (printed circuits, microcomputers, 35).

Metropolitan Quebec City is also home to some 20 research centres in high-technology fields, including the Defence Research Centre in Valcartier, the Laser and Optics Research Laboratory, the Nutrition Research Centre and the Quebec Biomass Development Centre, which have developed internationally-recognized expertise in optics and laser technology, food biotechnology and development of forest and aquatic biomass.

The region is hoping to strengthen and diversify its economy, particularly by developing the high-technology sector. Major steps have already been taken to attract high-tech industries. The action group for the technological and industrial advancement of the Quebec City region (GATIQ) aims to maximize the industrial spinoffs of research by promoting technology transfers to local industry. The St. Foy technology park and the National Optics Institute, both officially opened in 1988, will also promote the development and establishment of high-technology companies.

Turning to investment, 1988 saw the announcement of the Glaverbec plate-glass plant to be built by the Glaverbel-Multiver-Cover group, a $140-million project that will create 300 jobs when it is completed in 1990. Ultramar has announced plans to invest $85 million to modernize and expand its refinery, the first phase of an investment program that may total $200 million. Daïshowa Paper is in the process of building a thermomechanical pulp mill, a $156-million project that should be completed by the end of 1989. MIL Davie spent $20 million to modernize its shipyard in 1988 in order to build the Gulfspan super-ferry (in progress, a $130-million contract) and refit the destroyers Algonquin and Iroquois ($100 million). These orders should help preserve between 1,800 and 2,000 jobs at least until 1990. In tourism, the Montmorency Falls site will be developed by the Pomerleau-Domtex group, which began construction in 1988 of a recreation and tourist resort (hotel, residential units and flower gardens) on the site of the former Dominion Textile mill (cost: $40 million; completion: 1991). A $70-million tourist development project was also launched at Mont St. Anne by the P. Martin-Macyro-J. Thériault group; "Village Ste-Anne" will include residential units, a hotel and a sports centre. In addition, a Sheraton hotel will be built near the mountain at a cost of $20 million.

Thetford Mines

Long known as "the asbestos capital of the world", the Thetford Mines area has been hit hard by the loss of over 3,000 mining jobs since 1980. Employment in the primary and manufacturing sectors is now divided mainly among agriculture (27%), asbestos mining (20%) and clothing (17%). The wood and furniture industries account for a further 9% of jobs. Agriculture is dominated by dairy farming, followed by beef cattle, hog farming and sugar maple groves. LAB Chrysotile, which includes the three remaining asbestos producers, employs some 1,100 workers. More than one-third (36%) of manufacturing employment is in clothing (1,000 jobs), followed by wood (10%), furniture (9%), food (8%) and plastics (7%). The largest manufacturers are Keystone Industries (jeans, 270 employees), Shermag (furniture, 190) and Métallurgie Frontenac (110). The tertiary sector generates 60% of total employment, reflecting the role of Thetford Mines as a service centre with federal and provincial government offices, a hospital (950 employees) and a CEGEP (230). Other major tertiary employers include Aligro (food distribution, 190 employees) and Hydro Quebec (170).

LAB Chrysotile experienced problems in 1988 with the temporary shutdown of one mine and a labour dispute paralysing another. A stronger asbestos market led to the reopening of the Bell mine and should stabilize employment. The manufacturing sector has posted a marked turnaround in the past few years after a sharp decline between 1981 and 1984. The establishment in 1989 of a plant producing agglomerate tiles of marble, granite and silica (Granirex) will create 80 jobs.

St. Georges

Known for its many small and medium-sized businesses, the area around St. Georges has an economy based mainly on manufacturing, which provides close to 40% of total employment (vs. 20% in Quebec). This heavy presence of manufacturing industry is due largely to the dynamism and entrepreneurship of business people in the Beauce. Close to one-third of the 7,600 manufacturing jobs are in textile-clothing; the major companies specialize in jeans, such as R.G.R. Sportswear (260 employees in St.Georges and another 200 in St. Prosper) and Confections de Beauce (245 employees in St. Côme), followed by blouses and shirts, including Perfection Shirt (330 employees in Courcelles and 70 in St. Gédéon) and Chemise Lapointe (240 in St.-Georges). Canam Manac operates three plants in the area: Manac (semi-trailers, containers, 450 employees) and Comact (logging and sawmill equipment, 100 employees) in St. Georges, and Aciers Canam in St. Gédéon (metal frames and joists, 580 employees). Canam Manac also has a stake in Procycle, the largest bicycle manufacturer in Canada (430 employees in St. Georges). These four plants account for roughly 20%

of manufacturing employment. Over one-third of manufacturing plants specialize in wood products (lumber and construction materials, millwork and furniture). This group employs one-quarter of all manufacturing workers and is characterized by the modest size of plants (only eight of the 76 facilities have more than 50 employees). Agriculture continues to hold an important place in the local economy, employing about 10% of the labour force; it is dominated by dairy production, followed by hog and poultry farming.

Several investment projects in the manufacturing sector are currently under way, including the establishment of a paint booth manufacturing plant in St. Georges ($1.3 million, 15 jobs) and the expansion of Confections de Beauce in St. Côme ($1.2 million, 20 jobs). Groupe Pomerleau is building a convention centre in St. Georges ($6 million; completion: March 1989).

Montmagny

The area around Montmagny has an economy based on forestry and agriculture, which dominate the rural part of the community (45% and 20% respectively of primary and manufacturing employment) and other manufacturing industries concentrated in Montmagny itself (35%). The principal forestry companies are La Coopérative de gestion forestière des Appalaches, a forest management cooperative in St. Apolline (150 jobs) and the Daaquam sawmill (310). Altogether, some 50 wood-processing companies provide close to 1,300 jobs, one-half of local manufacturing employment. The town of Montmagny has some 40 manufacturing firms, including Inglis (household appliances, 445 employees), Consoltex (synthetic fabrics, 170), Montel (metal furniture and shelving, 135), Roy Industries (commercial metal furniture, 115) and Dionne Textiles (rayon and other synthetic yarns, 90). Montmagny also serves as a regional service hub, with a hospital (450 jobs) and several federal and provincial government offices. Tourism is centered largely on the banks of the St. Lawrence and the Montmagny islands, used as staging areas by large numbers of migratory birds, including wild geese which may be hunted in the fall. The development of Grosse Ile as a National Historic Park will further spur the development of local tourism.

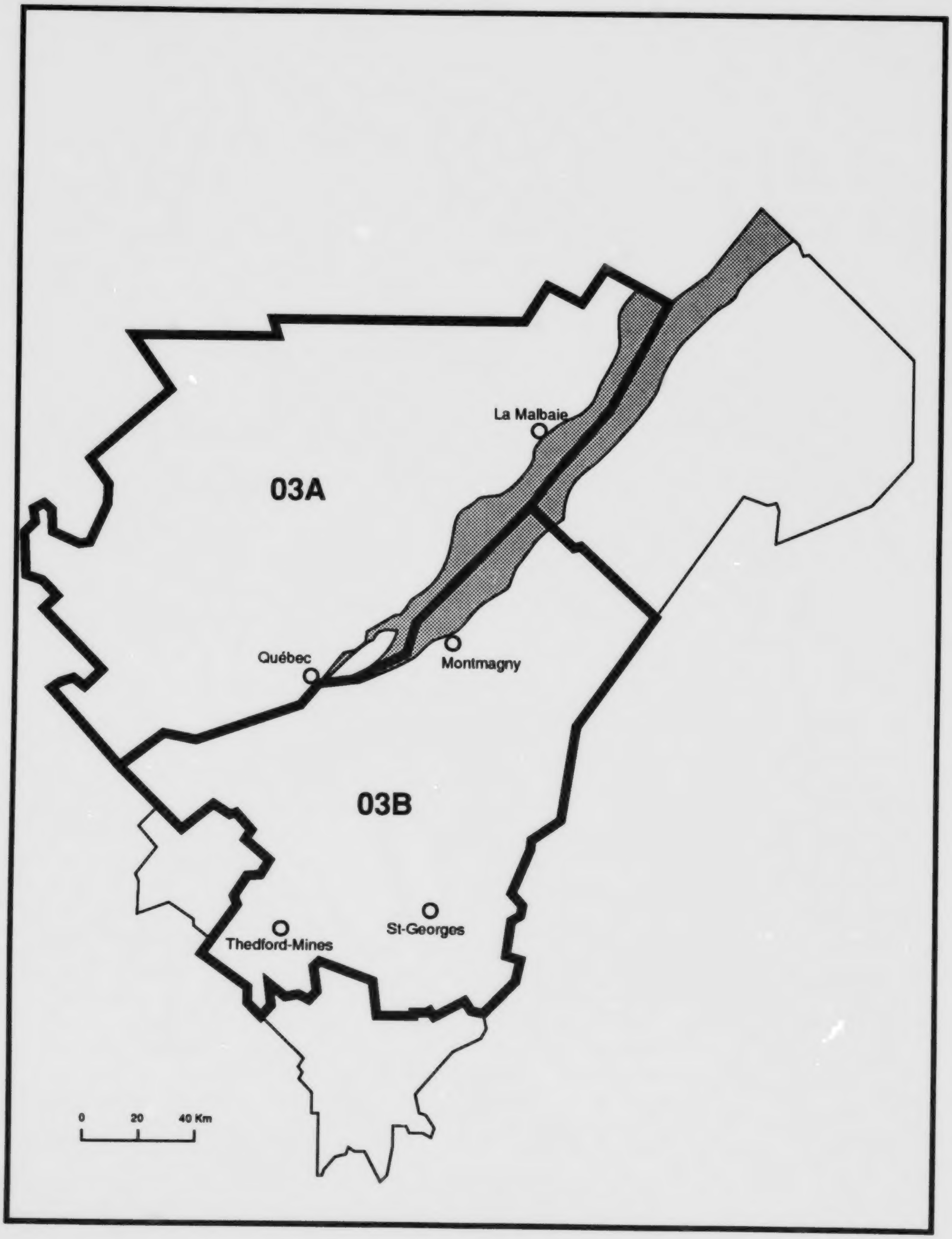
Income

Per capita personal disposable income in the greater Quebec City region corresponds to 97% of the provincial average. There are considerable differences, however, among the principal communities in the region. Metropolitan Quebec City, where over one-third of employment is in government and parapublic services, posts an income level 8% above the Quebec average, whereas income levels in Thetford Mines and Montmagny are 5%, and in St. Georges 20%, below the provincial average.

Labour market

The Quebec City region posted a solid labour market performance in 1988. The number of persons employed rose by 3.6%, twice as sharply as in 1987 (1.8%). The unemployment rate dropped from 8.5% to 8%, the second-lowest level in Quebec after the Outaouais (7.9%).

03A - Québec / 03B - Chaudière-Appalaches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MAURICIE BOIS-FRANCS

Situated in the heart of Quebec, this region is the province's fourth-largest with a population of 452,700 (6.9% of the provincial total). Close to 30% of the population in Mauricie-Bois Francs lives in the Trois Rivières metropolitan area (pop. 128,800). Another 35% lives in the communities of Shawinigan-Grand Mère (62,000), Drummondville (56,300) and Victoriaville (38,000). Population growth in the region has slowed down in recent years, dropping from 4.3% between 1976 and 1981 to 1.1% between 1981 and 1986, compared with provincial rates of 3.3% and 1.6%. Metropolitan Trois Rivières, however, recorded a population increase above the Quebec average between 1981 and 1986 (2.8%), as did the communities of Drummondville (2.9%) and Victoriaville (4.3%). Shawinigan-Grand Mère, hit by plant closings at the beginning of the decade, suffered a drop of 2.2%.

Metropolitan Trois Rivières

Metropolitan Trois Rivières, which covers some 10 municipalities including Bécancour on the south shore of the St. Lawrence, has an economy based on manufacturing and on the area's role as a regional service hub. As the capital of the Mauricie and part of Bois Francs, the community has a highly developed tertiary sector (70% of jobs). Education, including two CEGEPs and the University of Quebec, and health care services, including four hospitals, together account for close to one-quarter of employment in the area. Several provincial and federal government departments have regional headquarters in the area, employing 1,700 people. The community has an airport and two all-season harbours; the port of Trois Rivières specializes mainly in the transshipment of grain and paper, while the port of Bécancour is used largely to unload raw materials for companies in the adjacent industrial park. Altogether, transportation and storage activities in the community provide some 1,600 jobs.

The manufacturing sector (close to one-quarter of all jobs) is characterized by the presence of large companies and heavy industries. One-half of all manufacturing jobs are concentrated in eight plants with over 200 employees each: the CIP, Kruger and Consolidated-Bathurst paper mills, with 1,340, 1,300 and 990 employees respectively, alone account for over one-quarter of manufacturing employment; they are followed by Reynolds (aluminum products, 865 employees), Aluminerie Bécancour (800), Union Underwear (410), SKW (silicon ferroalloys, 250) and C-I-L (caustic soda and hydrogen chloride, 220). Overall, the largest manufacturing industry is paper (29% of jobs), followed by textile-clothing (16%), primary metals (16%) and food and beverages (9%).

The region has benefitted in recent years from large-scale projects at the Bécancour industrial park and port, such as Aluminerie Bécancour and Norsk Hydro. The park, built and operated by the province, was designed for heavy industry and ranks seventh in North America in terms of surface area. Aluminerie Bécancour, which has invested $1.2 billion there since 1983, is about to spend another $550 million to increase its annual production capacity by 50% to 360,000 tonnes. Construction of a third series of vats will begin in mid-1989 and be completed early in 1991. This expansion will create 200 additional jobs at the aluminum mill and make it one of the largest in the world, second only to a plant in the U.S.S.R. The Norsk Hydro magnesium plant will come on stream in June 1989, following a $500-million investment that will create 350 jobs. In Trois Rivières, the major project is the addition of a paper machine at the Kruger mill. Begun in 1988, this expansion will cost $422 million and create 45 additional jobs when completed in 1990. This paper mill will thus become the largest in Canada with an annual production capacity of close to one million tonnes.

Shawinigan-Grand Mère

The economy of Shawinigan-Grand Mère is based mainly on manufacturing (6,000 jobs). The Revenue Canada Taxation Centre (1,600 jobs) also contributes significantly to the local economy. Six large companies account for two-thirds of manufacturing employment: Alcan Smelters and Chemicals (extruded ingots, alum, carbon pulp, 615 employees), Doral Boats (pleasure craft, 450), Moïse Cadorette (pleasure craft, 350), Satexil (fabrics and yarns, 310), BF Goodrich (PVC, resins and compounds, 245) and especially Consolidated-Bathurst (two pulp, newsprint and paperboard mills, 2,045). Another 7% of manufacturing employment is provided by Norton (carbon silicide, 165), Alcan Wire and Cable (125) and Panneaux Malette Waferboard (100). Overall, the principal industries are pulp and paper (36% of manufacturing employment), primary metals (12%), transportation equipment (mainly the marine industry concentrated in Grand Mère, 10%), textile-clothing (8%) and chemicals (6%). In tourism, the area benefits from the presence nearby of the Mauricie National Park, which generates revenue for local businesses and services and provides 165 jobs in park administration.

Shawinigan-Grand Mère has been hard hit by plant closings since 1982, among them Du Pont, Textiles Corvelle, Carbure Shawinigan, CIL, Wabasso and Hanna Shoe Corporation; these companies accounted for a total of 1,500 jobs in 1979. The shutdown of Shawbec (100 jobs) last summer dealt another blow to the local economy. Several of the remaining large corporations have recently invested in modernizing their equipment, while others are in the process of doing so. Consolidated-Bathurst will spend $280 million in 1989- 90 to install a new paper machine at its century-old Grand Mère mill. Alcan invested $15 million in 1988 in new wastewater treatment facilities. BF Goodrich has begun a modernization program to cost $22 million over three years. Les Teinturiers Perfecta has installed an ultra-modern fabric dyeing and finishing plant in the Grand Mère regional business incubator, a $6-million project creating 70 jobs. This modernization of large plants combined with the establishment of a number of small and medium-sized companies in the past few years will help to strengthen and diversify the local industrial base.

The industrial profile of the south shore of the region (Bois Francs) differs significantly from that of the north shore (Mauricie). The Mauricie is characterized by the presence of large companies operating particularly in the paper and primary metals industries, whereas Bois Francs has a large concentration of small and medium-sized companies in traditional industries, such as clothing, textiles, furniture and food and beverages. And Agriculture plays a more important role in the economic structure of Bois Francs (9% of total employment vs. 4% in the Mauricie).

Victoriaville-Plessisville

At the centre of the Bois Francs region, the area around Victoriaville and Plessisville, including Princeville and Warwick, has an economy based largely on the agri-food, furniture and millwork and clothing industries, which provide 30%, 20% and 19% of employment respectively in the primary and manufacturing sectors. Agri-food activity is geared mainly to dairy production, followed by poultry, hog and beef cattle farming and processing; maple products also generate significant revenue in this area, nicknamed "the maple capital of the world". The major food processing plants are Croustilles Yum-Yum in Warwick (potato chips, 300 employees), the abattoir of the Coopérative Fédérée du Québec (240) and Aliments Prince (bacon, 160) in Princeville, followed by Lactantia in Victoriaville (dairy products and margarine, 130).

Victoriaville and the surrounding area are known mainly for furniture manufacturing and millwork. Some 60 furniture plants employ more than 1,000 people, the largest number at Meubles Daveluyville (250 employees) and Meubles Princeville (145), both specializing in bedroom and dining room suites, followed by Vic Store Fixtures (110). Another 60-odd companies make millwork products (1,200 jobs), in particular caskets, doors and moldings; the largest are Roland Boulanger & Cie, the leading Canadian manufacturer of doors and moldings (155 employees) and Beco (doors and windows, 110) in Warwick, and Victoriaville Caskets (130) and Atlas Caskets (100) in Victoriaville. The furniture design school at Victoriaville CEGEP and the furniture and millwork industrial research centre (CRIMBO) are major assets to these industries.

The clothing industry employs over 2,100 people in some 70 plants, of which only a dozen have more than 50 employees. Most of the companies make clothing under contract to Montreal manufacturers. The largest employers are Vêtements Victoriaville (sports coats and overcoats, 165 employees) and Confection Plus (jackets and jeans, 150) in Victoriaville, Vêtements Avanti (sweaters and underwear, 145) and Somerset Hosiery Mills (120) in Plessisville, followed by Domino Knitting in Daveluyville (high-quality children's clothing, 100).

Clothing, the furniture-wood group and food and beverages together account for close to two-thirds of local manufacturing employment. The remaining manufacturing jobs are found mainly in metal fabricating and machinery (11%), and paper and printing (11%), with as major employers Cascades in Kingsey Falls (paperboard and paper products, 430 employees), Forano in Plessisville (heavy machinery, 250), Aciers VicWest in Victoriaville (metal siding, 170) and Industries Ling in Warwick (folding paper boxes, 190). Princeville has developed a specialized industry - boat building - with manufacturers of fibreglass or aluminum craft, such as Groupe Espadon Peterborough (160 employees), Princefib (135) and Altra Marine Products (125).

Located midway between Montreal and Quebec City, Victoriaville serves as a distribution hub, home to a major hardware wholesaler, Sodisco (275 employees), as well as distribution centres operated by Culinar, Provigo and the Fédération des Producteurs d'Oeufs du Québec (Quebec federation of egg producers), representing a total of 230 jobs.

On the investment front, a number of projects are in progress in the manufacturing sector. Cascades is modernizing its Kingsey Falls facilities at a cost of $30 million; 40 new jobs should be created. Industries Ling has begun an $8.7-million expansion project that will allow the company to treble production and create 41 jobs by 1991. Sodisco has invested $5 million to increase its storage capacity by one-half. Forano has begun a $4.5-million project to modernize its plant and introduce computer-assisted design and manufacturing. Meubles Daveluyville has launched a $2.2-million expansion program to enlarge its plant and warehouses, add two wood-drying machines and automate production equipment, thereby creating 75 new jobs over three years. Vic Store Fixtures has also begun an expansion and modernization project, at a cost of $1.8 million, which will create 60 jobs by 1990. DCN Plastic (65 employees in Warwick) has invested $1.2 million in expansion and modernization. Aliments Prince has completed a $1.5-million project doubling its bacon production capacity. Croustilles Yum-Yum is making improvements costing $6.3 million that will allow it to double production and create 40 new jobs. Princefib is investing $1 million to expand its facilities and introduce a new line of fishing boats. Also announced in 1988 was the construction in 1989-90 of a regional shopping mall, Le Faubourg St-Louis, in Victoriaville ($40 million, 400 jobs).

Drummondville

The Drummondville area is heavily industrialized, with manufacturing accounting for one-third of employment (vs. 20% in Quebec). Formerly associated mainly with the textile industry (50% of manufacturing jobs in 1972), this area now has a diversified industrial base thanks largely to the growth of small and medium-sized businesses, which represent 98% of plants and two-thirds of employment in the manufacturing sector. Textiles remain the major industry, with some 2,800 jobs (27% of the manufacturing total); two-thirds of those jobs are at Dominion Textile (the only mill in Canada to make denim for jeans, 920 employees), Textiles Monterey (lining material, industrial and garment fabrics, 530) and Celanese (textured yarns, 490), the three largest industrial employers in the area. Next in size are electrical products and printing (each with 9% of manufacturing employment), machinery, metal fabricating and food and beverages (8% each), clothing (7%) and wood (6%). Large companies in these industries include GTE Sylvania (lamps, 470 employees), Siemens (electrical circuit breakers and panels, etc., 250), Litho Prestige (magazines, paperbacks, catalogues, 370) and Drummond Business Forms (270). In the past few years Drummondville has attracted high-technology firms such as Disque Améric (compact disks, 120 employees) and Technologie Rasakti (precision machining for the aerospace, aeronautics and automobile industries, 20).

Drummondville is also a trade centre and, with two hospitals (1,700 employees) and a CEGEP (300), provides education and health care services for the surrounding area. Its central location, at the intersection of major highways and a short distance from Montreal, Quebec City, Trois Rivières and Sherbrooke, makes Drummondville an ideal distribution centre; there are more than 220 wholesale firms in the area employing 1,300 people, most of whom work for wholesalers of machinery, hardware and automobile products.

Tourism has expanded considerably in recent years; events and attractions such as the World Folk Festival, the Parc des Voltigeurs, the Village québécois d'Antan (the recreation of an early Quebec village) and the International Midget Hockey Tournament attract over one million visitors every year.

A new regional shopping mall is under construction at a cost of $50 million: Les Promenades Drummondville will contain over 100 stores, among them Sears, Zellers and Steinberg, and will create 800 jobs by the time it opens in mid-1989. In the industrial sector, Dominion Textile has announced a $30-million project involving the introduction of new spinning technology, upgrading of existing equipment, new buildings and the installation of an ultra-modern air filtration and ventilation system. These changes, to be made between 1989 and 1991, will make the plant one of the most modern in the world. The Siemens plant has obtained a world licence to manufacture new electrical components for locomotives, in particular those of General Motors; these new activities will require expansion at a cost of $8 million and will create 40 jobs. GTE Sylvania has undertaken a series of modernization projects costing $4 million. J. Houle & Fils (105 employees), a manufacturer of farm machinery, has started a $2- million expansion and modernization program that will create 32 jobs by 1991. Tapis Venture (175 employees) invested $1.3 million in 1988 to modernize its plant. Complexe Serricole Drummond, which employs 75 people to grow hothouse roses, has expanded its facilities at a cost of $2.5 million, which will allow the company to boost annual production by 1,250,000 roses and create 14 jobs. The company is also conducting a joint $4- million project with Laval University and the federal government involving research and experimental cultivation of other flower varieties. On the down side, Drummondville has had to suffer the closing of Universal Bicycle (low-end bicycles, 315 jobs), a victim of changing consumer taste and rising imports from the Far East.

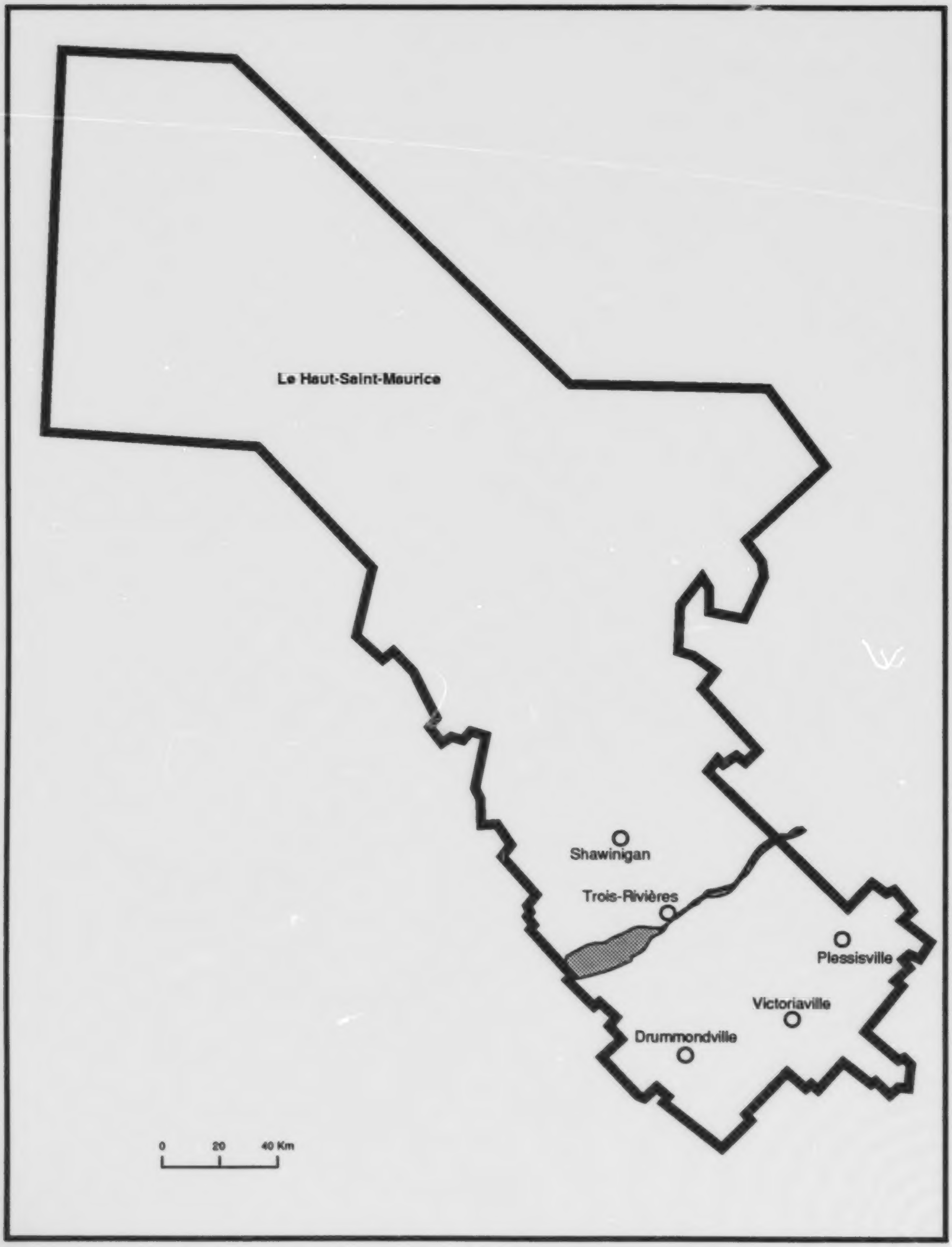
Income

Per capita personal disposable income in the Mauricie-Bois Francs region stands at 87% of the Quebec average. The level is higher in the major urban centres: it reaches 93% in Trois Rivières, 90% in Victoriaville, 89% in Drummondville and 88% in Shawinigan.

Labour Market

Employment continued to rise in Mauricie-Bois Francs in 1988, but at a slightly lower rate (2.8%) than in 1987 (3.1%). The increases in the past two years are comparable to the provincial averages but are none the less remarkable because they follow two years of record job creation in 1985 (7.1%) and 1986 (6.7%). The unemployment rate dropped from 11.4% in 1987 to 9.5% in 1988, bringing it into line with the provincial average of 9.4%.

04 - Mauricie-Bois-Francs


Le Haut-Saint-Maurice
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Trois-Rivières
Plessisville
Victoriaville
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ESTRIE

Nestled in Quebec's southeastern corner, the Eastern Townships is the province's smallest administrative region, with a surface area of 8,560 km^2. In 1986, it had a population of 257,700 (3.9% of the provincial total). Most of its population (54%, or 130,000 inhabitants) lives in or near Sherbrooke, the regional capital. Its other main centres are the cities of Magog (18,700) and Asbestos (12,400), and the towns of Coaticook (6,400) and Lac Mégantic (5,700).

The population of the communities of Sherbrooke and Magog grew by 3.8% and 3.2% respectively between 1981 and 1986 (vs. 1.5% in Quebec as a whole), while that of the rest of the region fell by 4%, for overall growth of 0.7% (vs. 4% between 1976 and 1981). Asbestos lost 17% of its population following numerous layoffs in the asbestos sector.

The economic base of the Eastern Townships is quite diversified. Textile-clothing-leather and agri-food (dominated by the dairy industry) are major components, with 26% and 21% of total employment in the primary and manufacturing sectors. Next come the paper-printing group (9%), wood-furniture (8%), and rubber-plastics, metal fabricating and transportation equipment (7% each). Tourism is also a significant factor in the economy of this region that is so abundantly decked out with lakes, mountains and forests. Such institutions as the University of Sherbrooke and CHUS (University of Sherbrooke hospital centre), whose influence and reputation extend beyond the region, also act as major engines in the economy.

The textile-clothing-leather sector, which provides one-third of regional manufacturing employment, plays a major role not only in Sherbrooke and Magog (Dominion Textile and other plants), but also in several smaller locations, including Richmond (H.H. Brown Shoes, 410 jobs) and Cookshire (Cookshiretex, woollen fabrics, 110). The growing rubber-plastics industry (7% of manufacturing employment) is dominated by Waterville T.G. in Waterville and Coaticook (rubber waterproofing strips for cars, 765 jobs), American Biltrite in Sherbrooke (floor tiles, footwear parts, 360), Genpak in Cookshire (plastic containers, 265), and the Camoplast Group in Richmond and Kingsbury (moulding of plastic resin and snowmobile tracks, 340). The transportation equipment industry (7% of manufacturing) is centered around Valcourt, where Bombardier employs more than 1,500 people in the production of snowmobiles and other recreational and industrial vehicles. The paper industry (6% of manufacturing) is represented almost exclusively by Domtar (fine paper, 860 jobs), Kruger (newsprint, 600) and Cascades (Kraft paper and paperboard, 500), the economic mainstays of Windsor, Bromptonville and East Augus respectively. The regional furniture industry (3% of manufacturing) is particularly dynamic, with such firms as Shermag (470 jobs in Sherbrooke, Lennoxville and Scotstown) and Bestar (270 jobs in Lac Mégantic). The Eastern Townships also boasts 30 or so companies in the granite sector (monuments, construction, tiles, counters, furniture, etc.). This sector, concentrated in the Lac Mégantic and Beebe Plain areas, has enjoyed substantial investment in recent years in order to meet growing demand for different granite products.

Metropolitan Sherbrooke

As well as being a commercial and industrial hub, Sherbrooke is a university town and an important medical centre. The only city to offer a full range of services, Sherbrooke is the nerve centre of the tertiary sector in the Eastern Townships. Trade is highly developed (16% of jobs in the metropolitan area), since most of population of the Eastern Townships converge on Sherbrooke to do their shopping. The Carrefour de l'Estrie, the region's largest shopping mall, alone account for 2,300 jobs. Linked to the markets of Eastern Canada and the Northeastern U.S. by a vast highway and railway network, Metropolitan Sherbrooke is also a distribution centre, home to more than 250 distributors and wholesalers, primarily of machinery, food and hardware. Metropolitan Sherbrooke has an extremely comprehensive health services and education infrastructure, with five hospitals, two CEGEPs and two universities. The University of Sherbrooke hospital centre (CHUS) is the city's largest employer, with 2,300 employees. In addition to dispensing health care, CHUS houses a research centre with an international reputation in genetic engineering, irradiation science and pharmacology. The other major hospitals are the Hôtel Dieu (1,300 employees) and St. Vincent de Paul (1,100).

The University of Sherbrooke, with a full-time student body of 9,000, is another major employer with 1,300 jobs. It is known for its co-operative education system (work-study terms) and is one of Canada's best universities for electrical engineering. Its role as engine is important: its clientele largely comes from outside the Eastern Townships, and it supports industrial development through joint training and research and development projects. Indeed, in 1982 the University sponsored the establishment of the Sherbrooke industrial microelectric corporation (SMIS), which makes international-calibre skills in applied microelectronics available to local industry. Bishop's University, an English-language school with 1,900 students and 360 employees, offers a well-known business course as well as programs in the arts and sciences.

The manufacturing sector, accounting for some 20% of metropolitan employment, is characterized by the presence of 14 large corporations providing more than one-half (54%) of jobs in the sector: in Sherbrooke itself, there are Dominion Textile (miscellaneous threads, polyester/cotton fabrics, raw fabrics for bedding, 1,465 employees), Combustion Engineering (industrial steam generators, 640), TIE/Communications (telephone systems and electric circuits, 430), Jack Spratt (trousers and jeans, 420), Lowney (chocolate and confectionery, 400), American Biltrite (floor covering, footwear parts, 390), Berkley & Four Seasons Wallpaper (330), Ingersoll-Rand (equipment for the pulp and paper industry, 275), Santana (footwear, 275), the French- language newspaper La Tribune (255), and Industries E.T.S.G. (sealed and toughened glass, 200); nearby, there are Waterville T.G. in Waterville (rubber waterproofing strips for cars, 625 employees), Kruger in Bromptonville (newsprint, 600), and the PPD Group in Ascot and Waterville (polyethylene and plastic parts, injection moulding, machinery and moulds for the plastics industry, 335). Overall, the main industries are rubber and plastics (14% of manufacturing employment), textiles and machinery (12% each), food and beverages (9%), paper (8%) and clothing (7%).

Whereas in 1981 Sherbrooke had only about 100 industrial jobs in high-technology sectors, it now has more than 1,000, primarily with TIE/Communications and the PPD Group, as well as Travenol (plastic medical supplies, 95 employees), C-MAC (hybrid circuits, 45), Microlec (printed circuits, electronic controls, 35), Groupe Visiontronique (software, 25) and Mesotec (precision tools for aeronautics, aircraft parts, 30).

The main industrial projects in progress are the modernization and expansion of Waterville T.G. ($40 million; 170 new jobs) and the modernization of S.W. Hooper's plant and research centre; Hooper, which manufactures machinery for the pulp and paper industry, expects to double its sales within five years and to triple its staff from 100 to 300. Other major industrial projects in progress are modernization and expansion work at Industries E.T.S.G. ($2.8 million; 25 jobs) and Jack Spratt ($1 million). Metropolitan

Sherbrooke also benefitted from the spinoffs of the rebuilding of the Domtar complex in Windsor ($900 million; timeframe 1985-1990). Another feature of 1988 was the start of construction on the Sherbrooke convention centre, a $40-million project including a hotel, office and commercial space, and housing for retired people. The Sherbrooke Cartography Institute was also inaugurated, at a cost of $12 million. Falling under the aegis of the federal Department of Energy, Mines and Resources, the 100-employee Institute will focus on the production of specialized charts from electronic and remote sensing equipment. Construction of a new $10-million provincial detention centre is scheduled to begin in 1989. The only fly in the ointment is the announcement of Lowney's closure in September 1989; activities at the plant, which was operating at a mere 35% of capacity, will be transferred to another Hershey Canada plant in Ontario.

Magog

The role of Magog and the surrounding area is primarily industrial and tourism-oriented. The area's main feature on the manufacturing front is its large textile-clothing sector, which accounts for almost 40% of manufacturing employment. Dominion Textile is way out ahead as the principal economic mainstay, employing a work force of 1,400 in its three fabric weaving and finishing plants for clothing, furniture or industrial use. Domtex alone provides close to one-third of manufacturing jobs. The clothing industry is dominated by Barmish (trousers for men, 230 employees) and Jomac (work gloves, 100). The other main industries are printing-publishing (15% of manufacturing employment), food-beverages (13%) and metal fabricating (11%), whose main firms are the Québécor Group's Imprimerie Magog- Orford (flyers and magazines, 435 employees), Viandes Olympia (delicatessen, cooked and smoked meats, 375) and Fonderie Magotteaux (chromium pellets and cast iron products, 170). The six firms mentioned above account for close to two-thirds of local manufacturing employment.

Lying on the edge of Lake Memphremagog, in the shadow of Mount Orford, the Magog-Orford area is one of the few sites in Quebec to have all the basic ingredients for development of a year-round international tourist resort, namely a lake for water sports, hills for skiing, a town for commercial and cultural activities, and a location near major markets, such as Montreal and the United States. Several tens of millions of dollars have been injected in the area in the past few years for the construction of commercial tourist accommodation (primarily condominiums) and improvements to the facilities at the Mount Orford and Owl's Head ski centres. The area's growing tourism role generates significant economic spinoffs and is well supported by a network of over 140 hotels and restaurants employing more than 1,300 people.

Several industrial and tourism projects were completed in 1988, or are in the process of completion. On the industrial side, Hayes-Dana inaugurated a new truck parts plant, a project which called for investment of $17 million and created about 100 jobs. Canadian Oxygen began construction on a liquid oxygen plant, which will cost $25 million and create 50 jobs when it opens in 1992. Thona Inc. is expanding and modernizing its rubber waterproofing joint factory, an investment of $3.2 million that should add 23 jobs to the 80 existing positions. On the tourism front, several secondary residence projects (condominiums) continued to grow, among them Memphre Club ($45 million from 1987 to 1989), Les Villas de l'Anse ($38 million from 1986 to 1989), Le Roussillon ($30 million from 1986 to 1989) and Les Jardins des Sables ($24 million from 1986 to 1989). The Chéribourg resort is building a 1,000-person conference centre, a sports-spa complex and 45 additional villas at a total cost of $20 million. Orford Management announced the investment of $50 million to build a hotel and sports complex at Mount Orford. And the City of Magog began the first phase of a recreational-tourism shoreline park at the head of Lake Memphremagog, a $5.2-million project which should act as a catalyst with private investors for the establishment of new tourism and commercial facilities.

Asbestos

The Asbestos area has been hard hit since 1980 by the decline in the asbestos market and the loss of 2,000 jobs at the J.M. Asbestos mine. This firm is still the economic mainstay, with more than 1,000 jobs, or 40% of primary and manufacturing sector employment. Second is agriculture, primarily dairy production followed by hog farming (25%), and clothing (18%). The clothing industry is responsible for close to 60% of local manufacturing employment, followed by the wood-furniture group (15%) and food (10%). The largest manufacturing employers are Confections M.G. (ladies' outerwear, 50 employees), Boulangerie d'Asbestos (bread and pastries, 50) and Geoffroy & Frères (lumber and pallets, 40). The tertiary sector (50% of jobs) is quite undeveloped, since this area is oriented primarily toward Sherbrooke, 55 km away.

Thanks to increased demand for asbestos in Europe and especially in Asia, J.M. Asbestos achieved its highest production volume in seven years in 1988, with growth of 9% since 1987. It also began a mine expansion program ($75 million) in 1987. More than 320 workers were hired to take away 42 million tonnes of dead ground, which should allow the mine's production capacity to be maintained for at least seven years. The work should be completed next summer, and it is expected that 250 of these 320 jobs will be maintained for at least 22 months.

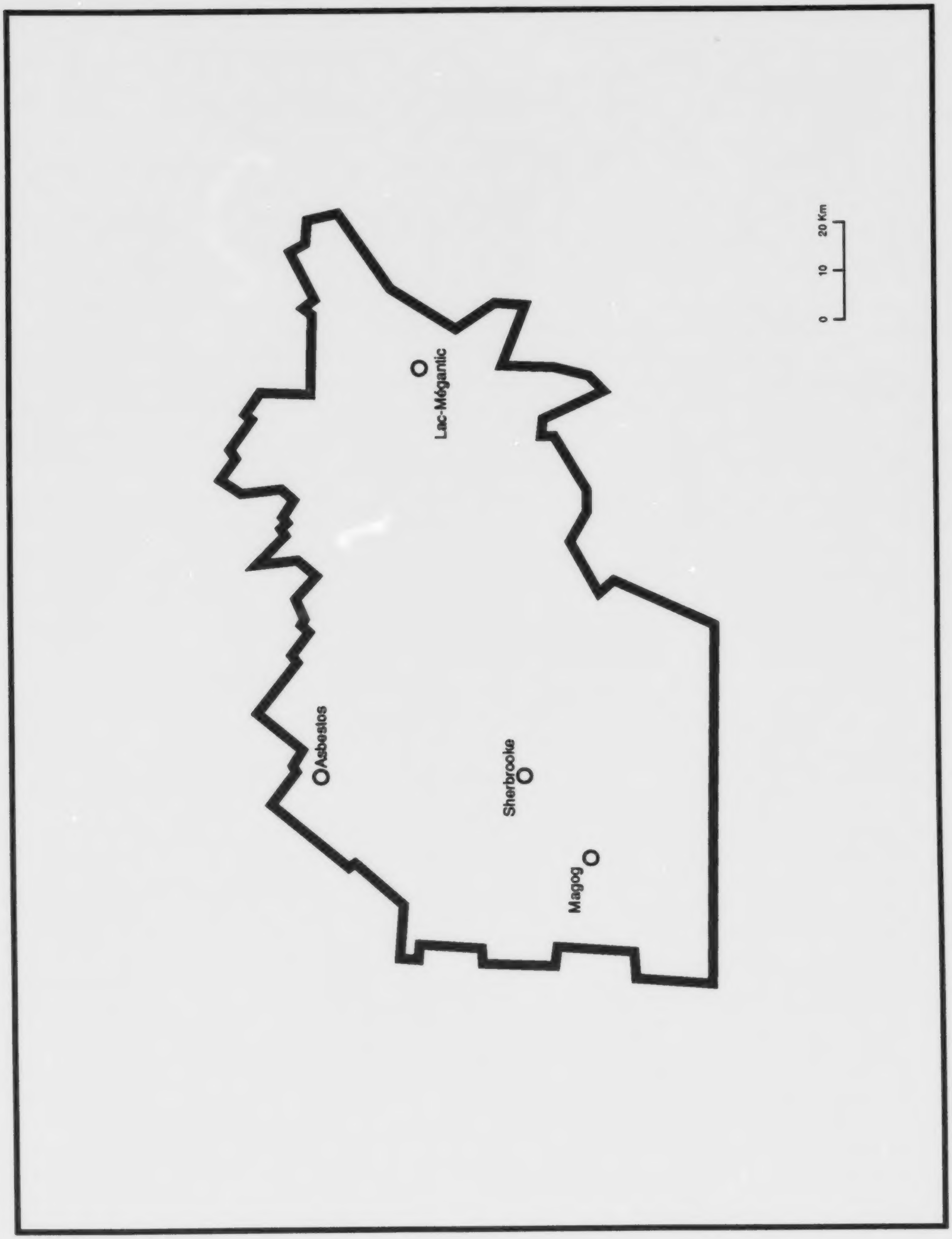
Income

Per capita personal disposable income for the Eastern Townships region stands at 90% of the Quebec level. For the metropolitan Sherbrooke area, this figure is closer to the provincial average (97%), while for Magog it is the same as the regional average (90%).

Labour market

According to Statistics Canada's Labour Force Survey, the number of persons employed in the Eastern Townships rose in 1988 by 5.5%, twice the provincial growth rate of 2.8%. This contrasts with 1987, when the Eastern Townships recorded employment growth (1.9%) well below the Quebec level (3.5%). This good employment performance helped to bring down the unemployment rate from 10.7% in 1987 to 8% in 1988, the province's second best rate after the Outaouais (7.9%).

05 - Estrie


Lac-Mégantic
Asbestos
Sherbrooke
Magog
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20 Km

OUTAOUAIS

This region in southwestern Quebec had just under 4% of the province's population in 1986 (256,500). By far the majority of the population lives along the Ottawa River separating Quebec and Ontario; almost 80% is concentrated in the community of Gatineau-Hull-Aylmer (pop. 200,200) opposite Ottawa, the National Capital. This community, Quebec's third largest, contains almost one-quarter of the inhabitants of the greater metropolitan area of Ottawa-Hull (pop. 819,300). The rest of the Outaouais is relatively unpopulated and non-urbanized; the town of Maniwaki (5,200) is the only other community of any size.

The population of the Outaouais grew by 5.6% between 1981 and 1986 (vs. 1.6% in Quebec). This gain of close to 14,000 people was seen almost entirely in the cities of Gatineau (+6,300), Aylmer (+2,600) and Hull (+2,100), largely thanks to the Corvée-Habitation home construction program, which attracted a number of young families from Ontario. Population growth in the Gatineau-Hull-Aylmer community (7.4%) was considerably higher than in the Montreal (2.1%) and Quebec City (3.3%) metropolitan regions, but lower than in the Ontario part of the Ottawa-Hull metropolitan area (11%).

Community of Gatineau-Hull-Aylmer

The economy of the Gatineau-Hull-Aylmer community is integrated into the economy of the National Capital Region of which it is part. The federal government employs more than 100,000 people in the capital region and generates several tens of thousands of other jobs in a multitude of related services. The large number of these jobs, combined with the presence in Hull of office buildings housing more than 20,000 federal employees, make for great mobility of manpower from one side of the Ottawa River to the other. In 1981, more than one-quarter of the workers living in the metropolitan Outaouais region were employed in public administration, and more than 40% (32,000 people) crossed daily to Ontario to work. At the same time, some 15,000 jobs (23%) in the Gatineau-Hull-Aylmer community were held by Ontarians, almost all of them federal public servants working in downtown Hull.

More than 85% of the jobs in Gatineau-Hull-Aylmer are in the tertiary sector (vs. 71% in Quebec). Federal public administration alone provides 22,000 jobs (31% of total employment). Among federal departments with their head offices in Hull are Supply and Services, Employment and Immigration, Consumer and Corporate Affairs, and Indian and Northern Affairs. National Defence is also a major employer. Most provincial departments also have offices there, providing about 1,000 jobs. The addition of 1,600 employees in the different municipal governments brings the share of local jobs in public administration to 35%. Health care services and education share 16% of jobs (11,600) in the area, including 2,500 at the Hull and Gatineau hospitals, 850 at the Cégep de l'Outaouais (Hull campus and Gatineau building) and 520 at the University of Quebec in Hull. The public tertiary (government and parapublic services) thus accounts for more than one-half of the jobs in the community.

Almost 75% of manufacturing employment (10% of the total) is concentrated in the following three establishments: E.B. Eddy (fine paper and kraft pulp, 2,000-employees in Hull), CIP (newsprint, 1,400 employees in Gatineau) and Canadian Government Printing Services (1,000 employees in Hull). Northern Telecom, which used to be a major employer, announced the closing of its Aylmer plant in 1988 (700 workers affected). The community is also home to a growing core of young microelectronics companies, such as ACDS Systèmes Graphiques (computer graphics systems, 100 employees), Computational Methods (digital communications systems, 20 employees), Omzig (software, 20 employees) and Menemotics (microcomputers, 10 employees). Digital Equipment has just set up a new customer service centre in Hull (250 jobs). Most of these firms were attracted by the presence of government departments, such as Supply and Services and National Defence. The business services sector (7% of total employment) has also developed in response to the federal presence, with its service needs in the fields of security, placement, management, appraisal, consulting, advertising, and so on.

The Gatineau-Hull-Aylmer community is under the influence of commercial attraction from Ottawa, leading to commercial outflows of as much as $100 million a year and the under-representation of employment in trade (11% of overall employment vs. 18% in Quebec). Thus, a large number of Outaouais residents head to Ottawa and Eastern Ontario for medical services and post-secondary education. Major efforts made over the past few years to attract the clientele in these fields back to Quebec are beginning to pay off. Finally, metropolitan Outaouais enjoys few of the spinoffs generated by the 2.5 million tourists who visit Ottawa each year, as less than 10% of them venture over to the Quebec side of the capital region. The situation in this regard should improve once the new Canadian Museum of Civilization opens in Hull in 1989.

Maniwaki

The socio-economic characteristics of the rural areas of Pontiac and Maniwaki are closer to those of the resource regions. The Maniwaki area, 135 km north of Hull, is the gateway to the vast forest region of the Northern Outaouais. Its economy is almost exclusively based on the forest industry, which provides three-quarters of local jobs in the primary and manufacturing sectors. Logging generates more than 750 jobs; the trees harvested go primarily to supply the large paper mills in the southern part of the Outaouais, namely CIP in Gatineau, E.B. Eddy in Hull and James McLaren in Masson. Close to 80% of local manufacturing jobs are in wood processing, most of them with Maniwaki Forest Products (hardwood, wood veneer and parquet flooring, 250 jobs) and Scierie Grand-Remous (sawed and planed lumber, 210 jobs). Hunting and fishing also play a major role in this area, with more than 90 outfitters, the highest concentration of outfitters in Quebec. It is also a resort area, for residents of the Ottawa-Hull region in particular. And the area boasts a major tourism complex in Mont St. Marie (skiing, golf, swimming, etc.), equipped with a hotel (200 employees) and a conference centre.

Pontiac

The huge Pontiac area, northwest of Hull, has a small population (less than 16,000) and is non-urbanized, its largest urban area, Shawville, having fewer than 1,600 inhabitants. The area's economic base is basically divided between forestry and agriculture, with the latter based on dairy production and cattle farming. This area, which provides 25% of Quebec's beef production, includes some of the province's most progressive breeders and some of the country's most productive dairy farms. The forestry industry generates some 1,250 jobs, including 630 in mills, primarily with Consolidated-Bathurst (kraft paper pulp, 355 employees at Portage du Fort), E.B. Eddy Forest Products (lumber and wood chips, 200 employees in Davidson) and Industries Fortin (dried and planed hardwood and softwood lumber, 70 employees in Fort Coulonge). These three firms account for more than 90% of local manufacturing employment. Resort activity is a major economic contributor to Pontiac, where there are more than 3,000 secondary residences. The service sector, trade in particular, is quite undeveloped, since the population is scattered throughout the area and due to the attraction of the nearby Ontario communities of Pembroke (pop. 22,600) and

Renfrew (8,300). The residents of Pontiac, most of them English-speaking, make 30% of their purchases in Ontario, and almost one in every five workers has a job in that province.

Income

Per capita personal disposable income in the Outaouais stands at 98% of the Quebec average. But there are considerable differences between the Gatineau-Hull-Aylmer community and the region's rural areas. Per capita personal disposable income for Hull, for instance, is 14% higher than the Quebec average, while for the Pontiac census division it is 20% lower. A large proportion of workers in metropolitan Outaouais enjoy high, steady incomes associated with government jobs, while the workers in the other sub-regions are largely employed in cyclical or seasonal activities with lower, less regular incomes.

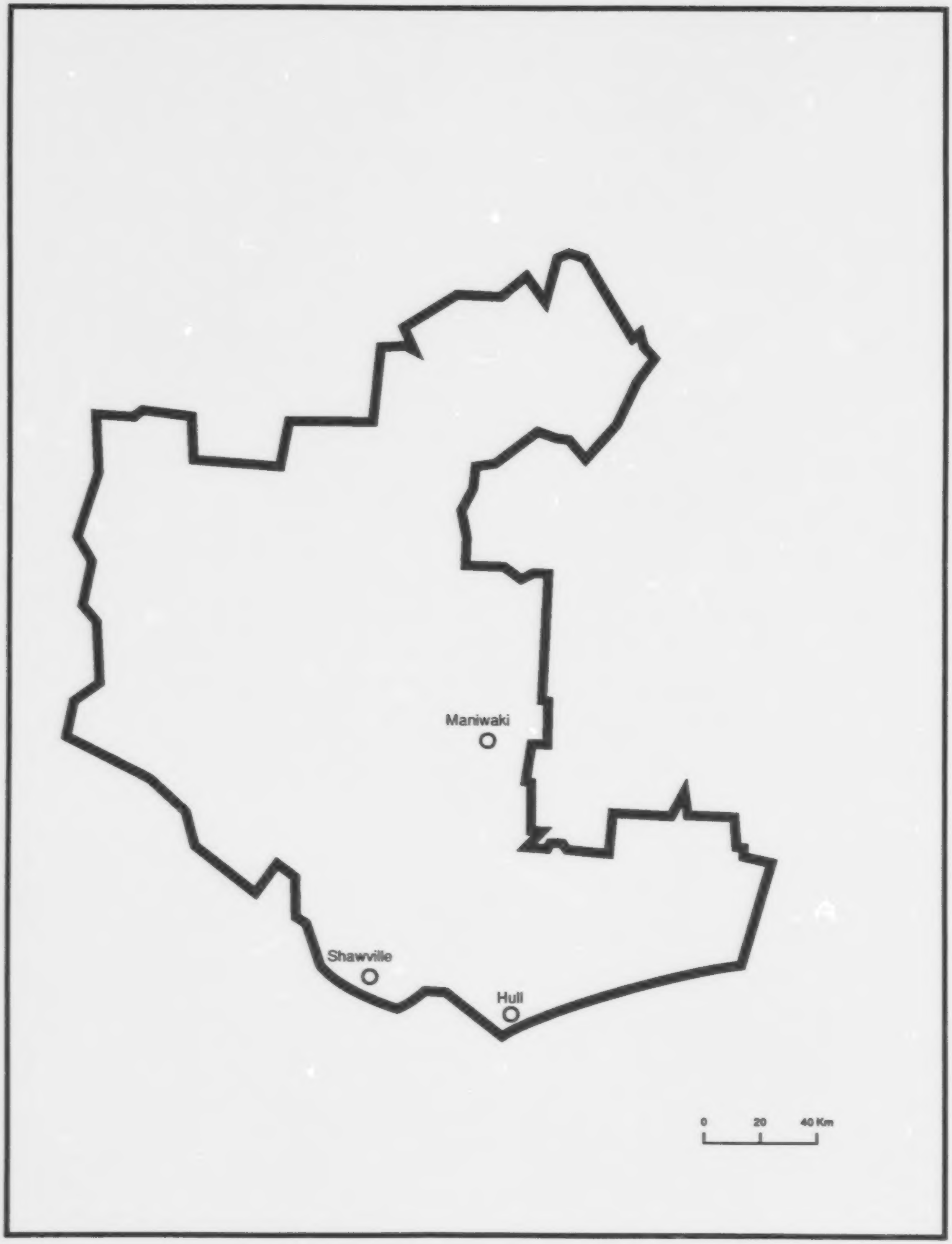
Investment

On the investment front, work continued in 1988 on the large site of the Canadian Museum of Civilization in Hull ($242 million), scheduled to open in spring 1989. A major residential development is under way in Gatineau: 2,400 homes and a number of businesses are to be constructed in "Tecumseh Village". Spread over seven years, this project will represent investment of $380 million. In the manufacturing sector, the main project completed in 1988 was the modernization of the James McLaren newsprint mill in Masson ($35 million). Modernization work on the Buckingham chemicals plant of Allright and Wilson (Erco) should be completed in 1989 ($48 million). In 1988, ACDS Systèmes Graphiques launched a five-year project to develop a new generation of graphics software. This $13.6-million project should create 24 jobs at ACDS, as well as a further 110 jobs in other companies in the Outaouais.

Labour market

The Outaouais's labour market performance in 1988 was highly enviable. The number of persons employed rose by 7.7%, the best growth rate in Quebec. Since the labour force grew less quickly (5.2%) than employment, the average unemployment rate fell by 2.4 points to 7.9%, Quebec's lowest rate. The participation rate hit a record 71.3%, the highest of any Quebec region (the average rate in Quebec is 64.1%).

07 - Outaouais


Maniwaki
Shawville
Hull
0
20
40 Km

GASPESIE/ILES-DE-LA-MADELEINE

This new administrative region, which covers the eastern part of the Gaspé peninsula and the entire Chaleur Bay area, had 112,500 inhabitants in 1986, or 1.7% of the population of Quebec. Its population, which lives from local resources, is spread along the coast in a series of small communities. Gaspé, the regional capital, is by far the largest municipality (pop. 17,400), followed by St. Anne des Monts (6,000), Percé (4,800), Grande Rivière (4,400), New Richmond (4,100) and Chandler (3,700). The region is non-urbanized: the largest urban area, Gaspé, has under 7,000 inhabitants. The region has lost 2% of its population since 1981, and this trend was observed in almost all of its main towns.

The fishing and fish products industries are a key component of this coastal region's economic base, providing almost 45% of employment in the primary and secondary sectors. The 4,300-odd Gaspé fishermen account for close to 80% of the value of landings in Quebec. Forestry is the second economic mainstay. Logging is conducted throughout almost the entire region, and the forestry industry, focusing on the production of lumber and paper, provides a little under one-third of employment in the primary and secondary sectors. The remainder of the economic base is basically shared among agriculture, tourism and mining (primarily the copper mine in Murdochville).

The economy of the Gaspé area is based essentially on fishing and fish products, logging and government services. Tourism is playing a growing role, largely due to the proximity of Forillon National Park. The main employers are the Purdel fish plant (400 employees at Rivière aux Renards), Hôtel Dieu hospital and Ross Sanatorium (400 employees each), three school boards (640 employees in all), the provincial government (200), Gaspesia Pulp and Paper (125 forestry employees working to supply its Chandler paper mill) and Parks Canada (70). The importance of government services (more than one-third of local jobs) gives Gaspé a higher degree of economic stability and level of income than most other communities in the Gaspé.

The area stretching from Port Daniel to Percé via Chandler and Grande Rivière is one of the two main centres of the regional fishing industry, the other one being in Rivière aux Renards with Purdel. It accounts for 40% of the value of catches in the Gaspé, with some 15 seafood processing plants, among them those of the Société des Pêches de Newport (660 employees, including 130 owner-fishermen), E. Gagnon & Fils

(390 employees at St. Thérèse) and Gaspé Shell-Fish (375 employees in Grande Rivière). The other economic mainstay of this region is Gaspesia Pulp and Paper, an Abitibi-Price company, which employs 950 people, 740 of them in its newsprint mill in Chandler. Modernization work is currently being carried out at this mill, at a cost of $100 million from 1986 to 1991. Tourism also plays an important role here. Percé, with its famous rock, receives an average of 100,000 visitors a year, and the area has about 100 motels and restaurants employing some 500 people.

The economy of the New Richmond area, including Carleton and Paspébiac, is based primarily on the forestry industry, which provides more than one-half of local jobs in the primary and manufacturing sectors. In addition to logging (close to 1,000 jobs), the area also has a dozen sawmills (400 jobs, including 150 at the Delebo sawmill in Nouvelle and 110 at the Scierie St. Alphonse) and Consolidated-Bathurst's kraft paper mill in New Richmond (450 employees). Another major activity in the area is agriculture, which, based on dairy production, cattle farming and apple-growing, employs 12% of the local work force. This is the only area in the Gaspé where agriculture plays so important a role and where fishing is not a major activity. The area is also increasingly becoming a destination for residential tourism, notably attracting fans of health vacations (thalassotherapy centres in Carleton and Paspébiac), surfboarding and scuba diving.

The Magdalen Islands, lying more than 200 km off the Gaspé peninsula, have 14,500 inhabitants living mainly from fishing and fish products (close to 40% of jobs) and tourism (7%). The salt mine worked by the Canadian Salt Company (200 jobs) is another important component of the Islands' economy.

Income

The Gaspé is known as the poorest region in Quebec. Its level of per capita disposable income is 72% of the provincial average, although it is higher at Gaspé (80%) and in the Magdalen Islands (82%). This reflects, on the one hand, the province's lowest employment/population ratio (46% in 1987 vs. 57% in Quebec) and, on the other hand, the importance of low- paid, seasonal jobs in the structure of regional employment.

Labour market

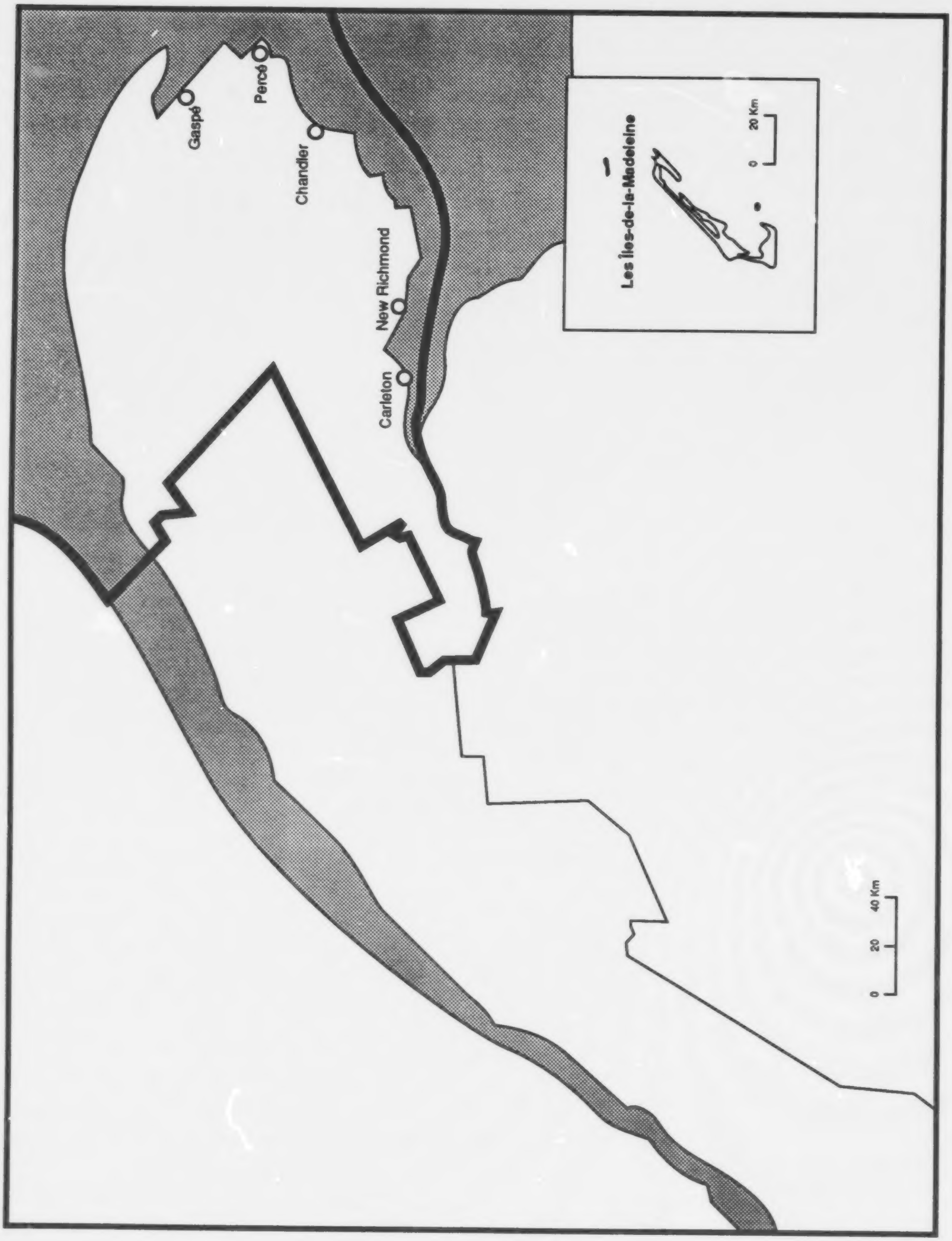
Employment has grown in the Gaspé over the past four years, but this region still has the province's highest unemployment rate. The region enjoyed exceptional employment growth (6.2%) in 1988, with 3,000 jobs added. This performance is far better than in 1987 (1.2%), and is the province's second best, after the Outaouais. Drawn by the improvement in the labour market, 3,000 people joined the labour force in 1988, so the unemployment rate remained virtually unchanged at 16.4%.

Overall, the tertiary sector performed well in 1988, but the fishing industry was hard hit by falling prices for certain groundfish, including cod and haddock, which were down as much as 40%.

Investment

In terms of capital expenditure, the main projects in progress in 1988, aside from the modernization of the Gaspésia paper mill, are the repairs to the Paspébiac-Grande Rivière-Gaspé sector of Highway 132 ($141 million) and the rebuilding of the conveyor at the Gaspé Mines copper mine in Murdochville ($20 million). Note that this mine had ceased operations in 1987 after a fire. Its owner, Noranda Minerals, reconsidered its decision to abandon the mine following the recent rise in copper prices, and its reopening is scheduled for early 1989. Other major projects in the region are wastewater treatment in Paspébiac ($6.1 million) and water supply and sewage work in Newport ($6.1 million).

01A Gaspésie - Îles-de-la-Madeleine


Gaspé
Percé
Chandler
New Richmond
Carleton
Les Îles-de-la-Madeleine
0
20 Km
0
20
40 Km

BAS ST-LAURENT

With almost twice the number of inhabitants as the Gaspé, the Lower St. Lawrence region had a population of 210,700 in 1986 (3.2% of the Quebec total). More than one in every five inhabitants lives in the Rimouski community (pop. 46,200). Another 20% live in the intermediate centres of Rivière du Loup (22,500) and Matane (15,400). The regional population fell slightly from 1981 to 1986 (-0.5%), in contrast to the significant increase of 3.8% recorded from 1976 to 1981.

The main industries in the Lower St. Lawrence are agriculture and forestry. The agri-food sector, based primarily on dairy production, and forestry, largely focusing on lumber production but also on pulp and paper, provide close to 45% and 30% of employment respectively in the primary and manufacturing sectors. The manufacture of transportation equipment is also a major industry, largely due to the presence of Bombardier's subway and train car factory in La Pocatière, which usually employs between 500 and 1,000 people, depending on the size of the order book. The rest of the region's economic base is mainly shared among the peat, clothing, textile and leather manufacturing and tourism sectors.

The tertiary sector predominates in the economy of the Rimouski area (more than 80% of jobs), reflecting its role as the region's administrative capital, a centre of educational and health care services, and the site of the head office of Quebec Telephone. This telephone utility, with a work force of more than 2,000, is by far the largest employer in the area, providing the whole of Eastern Quebec and the North Shore with telephone, remote-access computing, data transmission and television broadcast services. The next largest employers are the hospital (1,100 employees), the CEGEP (720), the University of Quebec (600) and the provincial government (740). Rimouski has become Quebec's centre for oceanography with the presence of the provincial research institute's oceanography component (INRS-Océanologie), the University of Quebec's oceanography department, the provincial marine institute (Institut maritime du Québec) and the proximity of the Maurice Lamontagne Institute in St. Flavie. Agriculture also plays a major role in the local economy, with farming throughout the hinterland.

Forestry is the economic mainstay of the Rivière du Loup area. As well as logging (500 jobs), there is the F.F. Soucy paper mill (310 employees) and the Mohawk pulp mill (65). This area also produces one-half of Quebec's peat. This industry generates some 600 jobs, including 225 with Tourbières Premier and 75 with Tourbe St-Laurent, and has given birth to firms manufacturing related machinery, among them Tardif & Frères (30 employees) and Équipements Tardif (20 employees). The remainder of the local economic base is largely divided between agriculture and other export-oriented manufacturing industries, including Calko (fabrics, 140 employees) and Quality Elastics (elastics for clothing, 45).

The Matane area has quite a diversified economic base, including logging and wood processing, fish products, agriculture, tourism, public administration and marine transportation. Forestry generates 840 jobs, close to one-third of local employment in the primary and manufacturing sectors. Approximately 400 of these jobs are in mills, mainly the CIP paperboard mill (150 employees) and the Bois de l'Est du Québec sawmill (115). On the fishing front, about 100 local fishermen supply the factories of Eastern Quebec Seafoods (shrimps and fish fillets, 150 employees) and Poissonnerie Les Méchins (135). Other large manufacturers are Daisyfresh Creations (lingerie, 135 employees) and Verreault Navigation (shipbuilding and repair, 80). The federal government is a major employer in Matane, with more than 500 employees, including 240 at the Department of Supply and Services (Cheque Redemption Control Division) and 80 at radio station CBGA, which broadcasts CBC's programming throughout Eastern Quebec. Matane has a busy harbour used for shipping wood chips and as a departure point for ferries (rail and vehicles) to Baie Comeau and Godbout on the North Shore. Finally, Matane is a major stop on the Gaspé tourist route and offers different attractions, including its famous Shrimp Festival.

The economies of the other Lower St.Lawrence sub-regions, the Matapedia Valley and Temiscouata, are almost entirely based on agriculture and logging and wood processing.

Income

Per capita disposable income for the Lower St. Lawrence stands at about 80% of the Quebec average (vs. 72% in the Gaspé). There are considerable variations among the region's main communities. Rimouski, where 40% of employment is in government services and telecommunications, has a level of income comparable to the provincial average, while this ratio is 85% in Rivière du Loup and 80% in Matane.

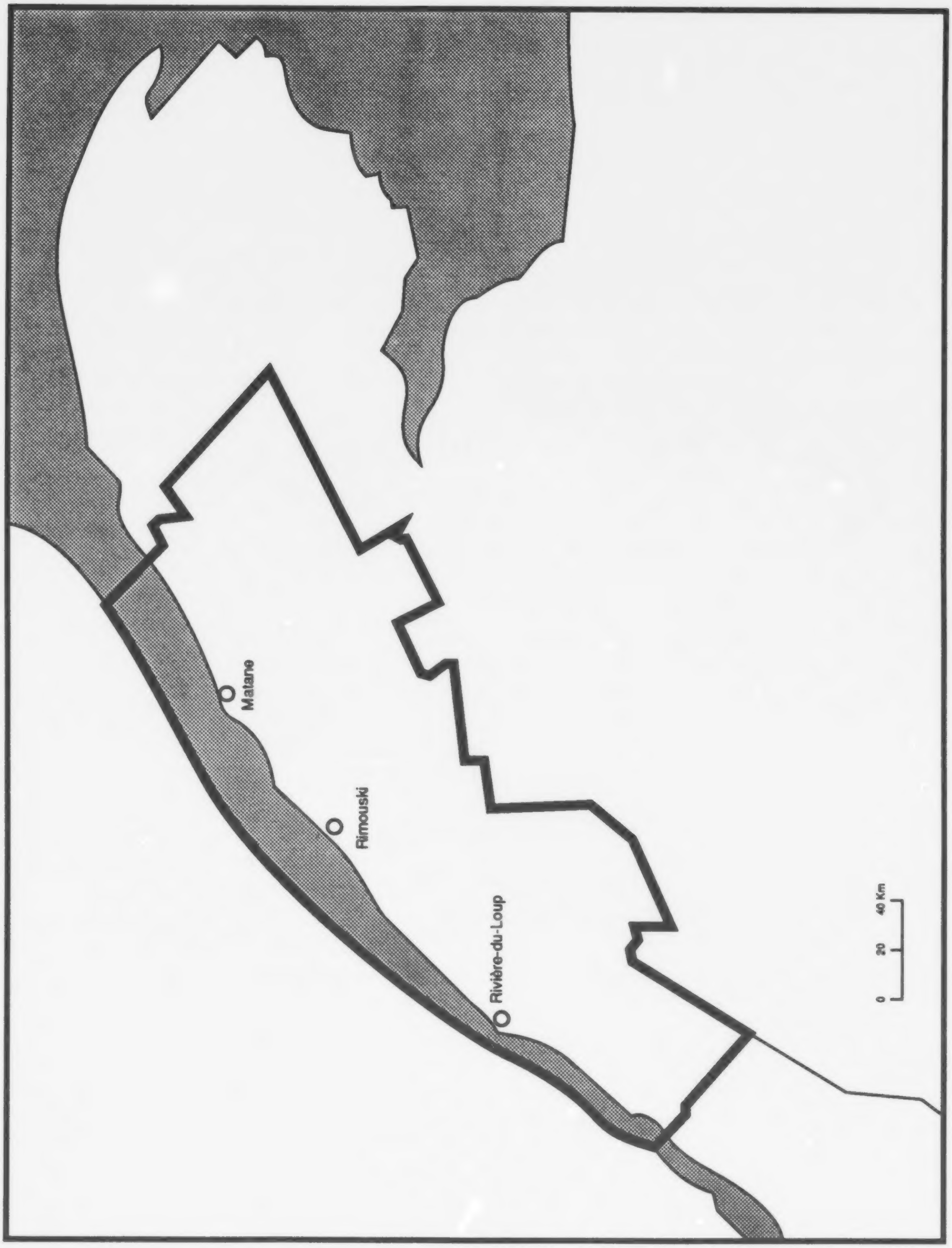
Investment

In terms of capital expenditure, 1988 was marked by the termination of expansion work on the F.F. Soucy mill in Rivière du Loup ($15 million) and the completion of smaller projects, such as construction of a shopping mall in Matane ($8 million), a conference centre and hotel in Rimouski ($8 million) and a residence and laboratory at the University of Quebec in Rimouski ($5 million). Among projects in progress or announced in 1988 were the extension of Autoroute 20 between Bic and Mont Joli ($47 million) and repairs to Highway 195 between Matane and Amqui ($15 million), the wastewater treatment program in Rimouski ($40 million from 1985 to 1989), construction by Miron of a cement works in Gros Cacouna harbour ($10 million), modernization at Tannerie des Ruisseaux in St. Pascal ($6 million, 35 jobs) and the Aimé Gaudreau sawmill in Estcourt ($5.3 million), opening of a silica mine in St. Jean Baptiste Vianney by Uniquartz ($8.5 million) and, most importantly, the establishment of a silica processing plant in Amqui ($80 million, 60 jobs) and the Donohue pulp mill in Matane ($287 million). The Donohue project will create 125 jobs in the mill and consolidate several hundred other jobs in the logging and sawmill sectors.

Labour market

The level of employment improved once again in 1988 (1.2%), albeit much more slowly than in 1987 (8.4%). The slower employment growth is attributable to the completion of major capital projects, the end of Bombardier's New York subway contract in La Pocatière, the closing of Marine Industries' Sometal plant in Rimouski (200 jobs) and the fact that the sectors which are the engines of the regional economy have run out of steam. Since the labour force grew more quickly than employment, the unemployment rate rose by 0.1% in 1988 to 12.5%, Quebec's second highest after the Gaspé.

01B Bas-Saint-Laurent


Matane
Rimouski
Rivière-du-Loup
0
20
40 Km

SAGUENAY/LAC ST-JEAN

This region has the largest population of any resource region with just under 300,000 inhabitants, or 4.4% of the population of Quebec. It is also the most highly urbanized resource region: more than one-half of its population (158,500) lives in the urban area including Chicoutimi, Jonquière and La Baie. Another 20% lives in the intermediate centres of Alma (30,000), Dolbeau-Mistassini (15,300), Roberval (11,500) and St. Félicien (9,300). The region recorded a slight population decrease between 1981 and 1986 (-0.1%), following a strong 6.1% increase from 1976 to 1981. Job growth in the region was slowed by the 1982 recession and the subsequent implementation of modernization and streamlining programs affecting the important paper and aluminum sectors.

Saguenay-Lac St. Jean is the most industrialized of the resource regions: 17% of jobs are in the manufacturing sector, compared with an average of 12% in the other resource regions. The region owes its industrialization to the vast system of lakes and rivers which criss-crosses its territory; this system, which was first used to float logs and then to generate electricity, led to the establishment of large pulp and paper and aluminum corporations. The pulp and paper (4,400 jobs) and wood (primarily sawmill) industries (3,400) account for almost 40% of the region's manufacturing employment. The addition of 4,200 jobs in forestry brings the number of jobs in the forestry sector to 12,000, or 40% of regional employment in primary and manufacturing industries. Alcan Smelters and Chemicals Ltd. and Alcan's other components employ some 7,600 people in Saguenay-Lac St. Jean, where they operate several plants manufacturing aluminum and related products (primarily in Jonquière, but also in Alma and La Baie), a railway line (Roberval-Saguenay Railway Company), a seaport and several hydro-electric plants supplying their factories. Alcan alone accounts for almost one-third of manufacturing jobs in the region, and close to 7% of total employment. Finally, the agri-food sector is important for the regional economy, employing more than 6,000 people, 4,000 of them in the agriculture sector. Based primarily on dairy production, the agri-food industry generates 20% of employment in the primary and manufacturing sectors.

Jonquière, the main industrial centre of Saguenay-Lac St. Jean, is the site of almost one-third of all manufacturing jobs in the region. The aluminum capital of the world, Jonquière accommodates some 80% of Alcan's regional work force. Alcan employs more than 5,200 its Jonquière Complex, specializing in production of aluminum ingots (primary production) and other products involved in the manufacture of aluminum. Apart from its smelting employees, Alcan employs a further 1,000 people in the Saguenay in its two aluminum sheet and cable plants in Jonquière (210 employees), its Energy Group (690 employees, including 150 at its four Lac St. Jean power plants), its Roberval-Saguenay Railway Company (210), its harbour facilities (360) and its Arvida Research and Development Centre in Jonquière (210). Part of the aluminum production from the Jonquière Complex is to be gradually transferred to the new Laterrière plant when this comes on stream in late 1989. The pulp and paper industry is the second economic mainstay of the Jonquière area, with Abitibi- Price (specialty paper, 1,230 employees) and Cascades Paper (kraft paper and paperboard, 390).

Chicoutimi is known primarily for the size of its service, trade and financial sectors. Almost one-third of regional employment in these areas is concentrated in Chicoutimi, the "metropolis" of the region. Chicoutimi also offers the region's population medical and educational services, as well as a large number of regional head offices and wholesale firms. Among the main employers are the hospital (2,400 employees), the University of Quebec (1,150 employees), Hydro Quebec (550), Bell Canada (390), CBC (110) and various provincial departments and agencies (640).

The economic base of the Alma area is quite diversified, with a focus on forestry, agri-food and aluminum. Alma also doubles as a service centre for the Lac St. Jean sub-region. The forestry industry generates some 1,800 jobs, more than 1,300 of them in mills. This sector depends largely on the activities of Abitibi-Price Inc., which has a paper mill in Alma (925 employees), a sawmill in Peribonka (180) and several hydro-electric plants in the surrounding area. The agri-food sector provides some 1,400 jobs and is based on dairy production, followed by potato-growing, broad beans and blueberries. More than 500 people are employed by about 20 food processing plants, 280 of them at the Chaîne Coopérative du Saguenay (dairy products) and 120 at the blueberry, fruit and meat freezing plant in St. Bruno. Alcan employs 520 people in its aluminum factory in Alma and another 150 work at its four hydro-electric plants supplying that factory and others in the region. Nicknamed the "city of hospitality", Alma is a major stop on the Saguenay-Lac St. Jean tourist circuit. The accommodation and restaurant sector employs more than 1,200 people, and a hospital (600 jobs) and a CEGEP (150) are located in Alma.

Forestry is the cornerstone of the economies of the Dolbeau-Mistassini and Roberval-St. Félicien areas, where it generates close to two-thirds of the jobs in the primary and manufacturing sectors. Domtar is the largest employer in the Dolbeau-Mistassini area, with 550 employees at its Dolbeau newsprint mill, 385 at its Mistassini sawmill and 300 workers in the forest. Next comes Donohue St. Félicien Inc., which operates a sawmill at St. Thomas Didyme (120 jobs) and a planing mill at Normandin (55 jobs) and employs 400 workers in its forestry division. The agri-food sector, based on dairy production and blueberry growing, is the second component in the economic base of the Dolbeau area. This town is also the centre for the blueberry farms of the Lac St. Jean sub-region, as well as being the headquarters of Julac, a firm specializing in the production of blueberry liqueurs, juices and aperitifs (30 employees in season).

The Roberval area, including St. Félicien, houses some 20 sawmills, the main ones being Donohue (350 employees) and Laberge & Laberge (180) in St. Félicien and Gagnon & Frères, a Consolidated- Bathurst subsidiary, in Roberval (250 employees). Donohue also operates a pulp mill in St. Félicien (300 jobs). The opening in 1988 of Normick Chambord's waferboard plant should create 95 jobs at the Chambord mill and another 200 in the forest. Other major manufacturing employers in this area are Tanguay Industries in St. Prime (forestry machinery, 200 employees) and Nutrinor in Chambord (dairy products, 100 employees). The health care sector is also a major source of jobs in Roberval, the site of a large hospital (1,000 employees) and a psychiatric centre (430 employees).

Income

Per capita disposable income for the Saguenay-Lac St. Jean region as a whole stands at 82% of the Quebec average. In terms of the main communities, the figure varies from 89% in the Chicoutimi-Jonquière metropolitan area to 77% in the community of Dolbeau. Income levels in Alma and Roberval are comparable to the regional average.

Investment

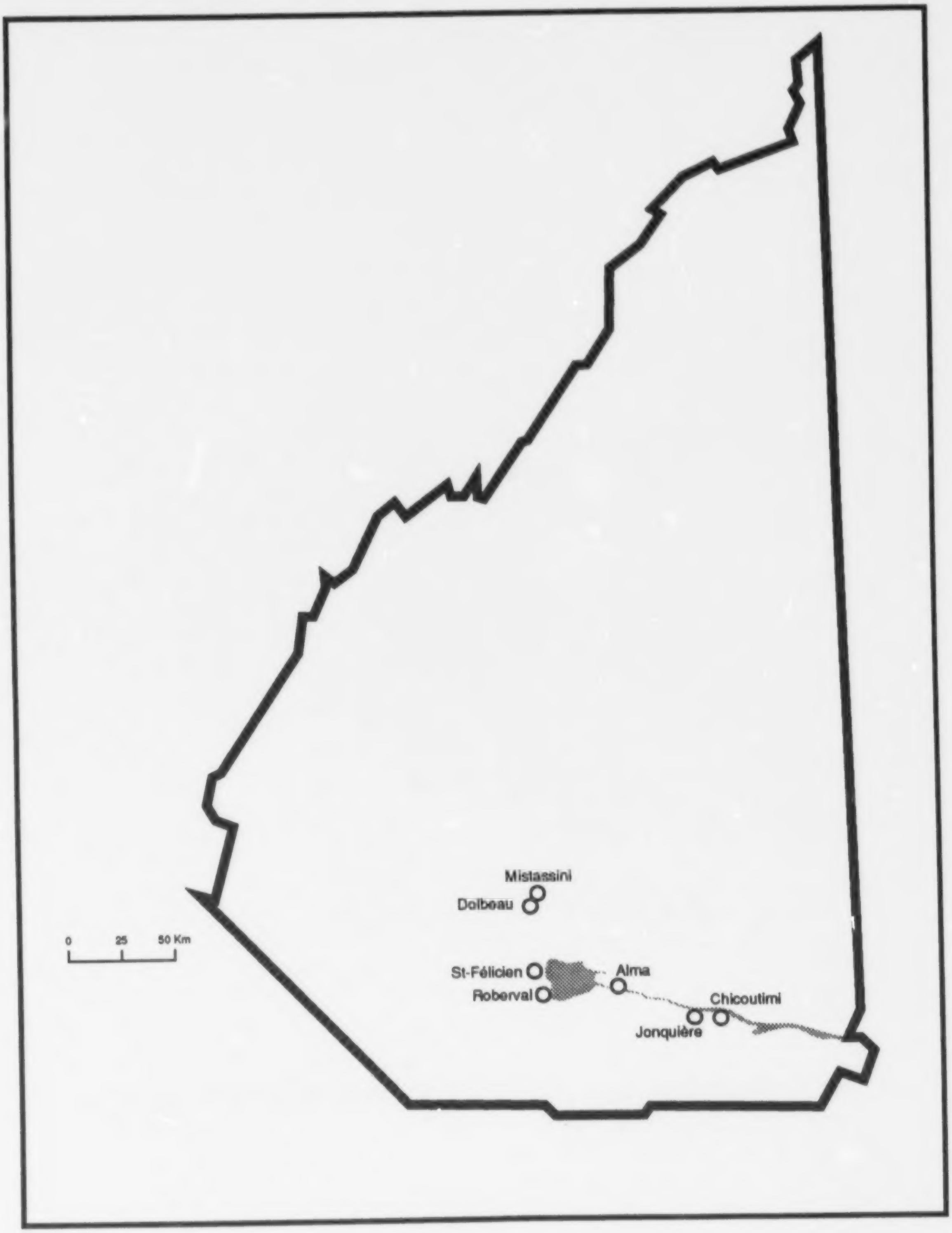
Among the industrial investment projects fully or almost completed in 1988 in Saguenay-Lac St. Jean are construction of the Normick Chambord waferboard plant ($58 million since 1987) and modernization work on the Abitibi-Price, Cascades and Alcan plants in Jonquière

($40 million, $30 million and $107 million respectively). The major feature of 1988 was the renewal and acceleration of work on the Laterrière aluminum plant, which will start full production in March 1991, 20 months earlier than originally scheduled. The total cost of this plant is estimated at $750 million. Alcan is also building a Duralcan manufacturing plant in Jonquière ($36 million) and a superwhite hydrate manufacturing plant ($28 million) where operations will begin in 1989, as well as modernizing its harbour facilities at La Baie ($46 million by 1990). Alcan's total investment in the region in 1988 is estimated at some $302 million.

Labour market

Growth in regional employment slowed in 1988, moving down to 0.5% from 1.3% in 1987. Ongoing modernization and streamlining programs led to major cutbacks in the work force in the paper and aluminum sectors, and slower job creation was seen in the tertiary sector. As the size of the labour force remained unchanged, the unemployment rate fell from 13.1% in 1987 to 12.3% in 1988, Quebec's third highest rate after the Gaspé and the Lower St. Lawrence.

02 - Saguenay-Lac-Saint-Jean


Mistassini
Dolbeau
0
25
50 Km
St-Félicien
Roberval
Alma
Chicoutimi
Jonquière

ABITIBI-TEMISCAMINGUE

The population of Abitibi-Temiscaming in 1986 was 147,200, or 2.3% of the Quebec total. More than one-half of its inhabitants are concentrated in the communities of Rouyn-Noranda (pop. 36,500), Val d'Or (27,200), Amos (9,300) and La Sarre (8,600). The region's population barely changed between 1981 and 1986 (+0.7%), after increasing by 3.5% from 1976 to 1981.

Lying some 600 km northwest of Montreal and more than 700 km from Toronto, Abitibi-Temiscaming has an economy based almost entirely on forestry and mining. These industries share almost 80% of primary and manufacturing sector employment and lie behind other major industries, including transportation and the production and maintenance of mining and forestry equipment. Agriculture, based on dairy production and cattle farming for the regional market, accounts for 3% of total employment; its position in the region is close to the provincial average.

Rouyn-Noranda and Val d'Or are in the heart of one of Canada's richest areas for mineral resources (gold, copper, zinc, silver, etc.). The economy of these two communities depends largely on the mining sector; 60-75% of local jobs in the primary and manufacturing sectors are directly related to mining. Rouyn-Noranda and Val d'Or, as well as being major towns in the Abitibi-Temiscaming region, are also commercial centres, each equipped with a regional airport acting as a hub for transportation to the North. Rouyn-Noranda, the regional capital, is home to a number of government agencies, one CEGEP and one university. It is also the site of Hydro Quebec's La Grande Region headquarters. The second mainstay of the economy of Val d'Or is a substantial wood and building panel industry, consisting primarily of the Forex (400 jobs) and Forpan (300) plants.

Approximately 85% of Quebec's workable gold deposits are to be found in Abitibi; Rouyn-Noranda and Val d'Or have fully benefitted from the spinoffs of the flow-through share program set up in 1983 by the federal and provincial governments. Spending on mining exploration in Abitibi-Temiscaming climbed from $64 million in 1983 to almost $400 million in 1987. In Rouyn-Noranda and Val d'Or this boom translated, on the one hand, into a substantial drop in unemployment and, one the other hand, into exceptional industrial, commercial and residential development. Several sites with major mining potential should enter production in these two areas over the next few years, leading to the creation of more than 1,000 new jobs in mining. The outlook for the exploration sector became gloomier, however, following tax reform and, especially, the October 1987 stock market crisis. Expenditure on exploration fell to less than $120 million in 1988.

The Noranda copper foundry, the largest employer in Rouyn-Noranda (1,100 employees), will cut its sulphuric acid emissions in half in 1990 when its new sulphuric acid plant starts production. This $125-million project will consolidate the future of this foundry, as well as creating 55 jobs.

In Val d'Or, the wood industry continues to grow. Forpan built a new resin and formaldehyde plant this year ($11 million) and modernized its particle board mill ($20 million).

The economies of the Amos and La Sarre areas are based primarily on the forestry sector, followed by the mining sector. In Amos, the main manufacturing employers are the Donohue-Normick paper mill (260 employees) and the J.E. Therrien sawmill, a subsidiary of Normick Perron (325 employees). Amos is also home to a major manufacturer of wood-cutting machinery, Harricana Metal (175 employees). This local firm has made considerable technological breakthroughs and exports its machinery to a number of countries. (The same is true for Roger International Machinery of Val d'Or in the field of drilling equipment for mines.) Amos is the departure point for the highway to Matagami, where Noranda operates two copper and zinc mines (300-400 jobs), and to Joutel, the site of the Agnico-Eagle gold mine (200 jobs). The head offices of Normick Perron and Howard-Bienvenu are located in La Sarre, as well as two of their sawmills (lumber, plywood and waferboard). These two firms employ the vast majority of the area's 1,400 forestry workers. Selbaie Mines, north of La Sarre (copper, zinc and gold), is also a large employer, with 320 employees. La Sarre will benefit from spinoffs from the opening of the Golden Pond mine in Casa Bérardi township ($75 million). When it is fully operational in 1991, the mine will employ 150 people.

The main centres of the more rural Temiscaming area are Ville Marie (pop. 2,600) and Temiscaming (2,100). The area's economy is largely based on forestry and agriculture, which provide 65% and 25% of primary and manufacturing jobs respectively. Ville Marie acts as a local service centre serving the agricultural hinterland. Temiscaming is the seat of activities of the Tembec Group, which operates two pulp mills there (700 employees). Tembec has begun construction on a

$265 million paperboard plant to open in 1990. This project, in addition to creating 150 jobs, will consolidate the activities of the two pulp mills.

Income

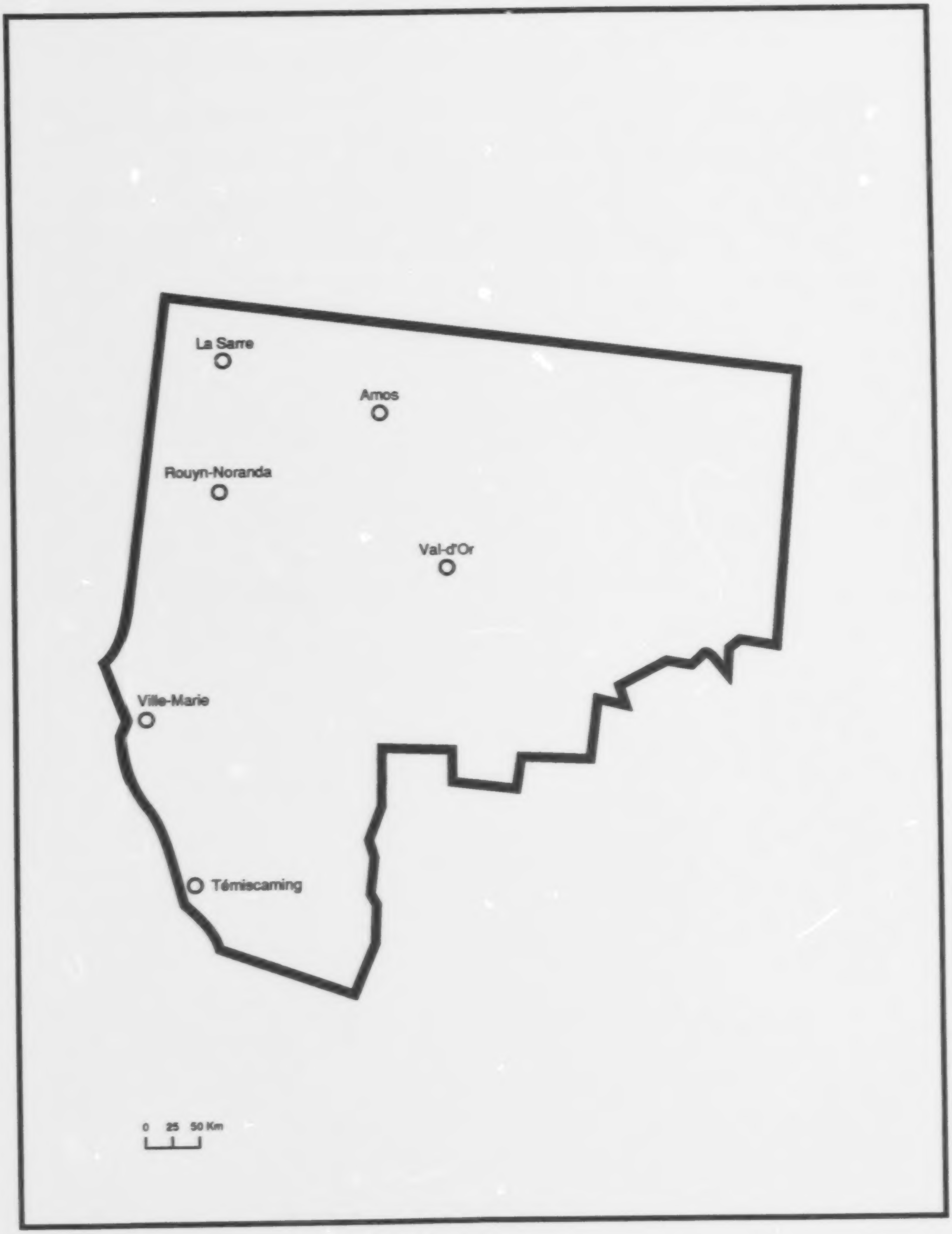
Per capita disposable personal income in the region stands at 84% of the Quebec average. Income levels in Rouyn-Noranda and Val d'Or are higher than the regional average, at 95% and 92% of the provincial average respectively.

Labour market

The labour market situation in Abitibi-Temiscaming has improved considerably over the past four years, due partly to increased exports of forest and mining products, but primarily to massive investment in mining exploration. These factors boosted employment from 55,000 in 1984 to 66,000 in 1988, with the average unemployment rate falling from 19% to 9.3%. The region posted the province's second highest employment growth in 1988 (7.5%).

Finally, the consolidation of forestry firms continued in recent years with the integration of sawing operations by paper companies: Donohue purchased the Saucier Group (470 employees in Comtois, Senneterre and Champneuf), Tembec acquired the Taschereau and Bearn sawmills (210 and 140 employees respectively) and Domtar bought Bisson & Bisson (230 employees in Matagami); and the movement will continue with the future sale of Normick Perron. This integration, while providing an outlet for the chips produced in the sawmills and ensuring a supply for the panel plants or pulp and paper mills, could contribute to the streamlining and optimum use of the resource, while at the same time allowing these integrated concerns to enjoy greater economic stability in the face of market fluctuations.

08 - Abitibi-Témiscamingue


La Sarre
Amos
Rouyn-Noranda
Val-d'Or
Ville-Marie
Témiscaming
0 25 50 Km

COTE-NORD

In 1986 the North Shore region had 104,300 inhabitants (1.6% of the Quebec population) scattered along a 1,600-km coastline from Tadoussac to Blanc Sablon. Two-thirds of this population lives in the communities of Baie Comeau (pop. 33,000), Sept Iles (28,000) and Port Cartier (6,900). The population of the region fell by 13,900 (-13.4%) between 1981 and 1986 following the closure in 1979 of the ITT-Rayonier pulp and paper mill in Port Cartier (2,000 jobs) and especially following the precipitous decline of the iron industry around the start of the decade (more than 5,000 mining jobs lost between 1977 and 1983). The mining towns of Schefferville and Gagnon, which had a total population of 5,500 in 1981, closed their doors, and Sept Iles and Port Cartier each lost about 15% of their population. As for Baie Comeau, its population remained quite steady (-2%), as its economy is based on sectors other than mining.

The economy of the North Shore region, whose centre lies some 900 km northeast of Montreal, is primarily based on forestry and mining. These two industries share some 70% of employment in the primary and manufacturing sectors and lie behind other major industries, such as rail and marine transportation. Other large primary and manufacturing industries are aluminum (14% of jobs), and fishing and fish products (8%). The North Shore is also a region of hydro-electric generation and transmission: 11 plants, including Manic 5, are located there, and close to one-half (46%) of Quebec's hydro-electric power passes through the region. Hydro Quebec employs almost 1,000 people and also generates major spinoffs through local purchases of goods and services ($13.6 million in 1987, for instance). Tourism is a growing economic contributor, owing in particular to the opening of the Mingan Archipelago National Park, near Havre St. Pierre, and the whalewatching boom, primarily in Tadoussac, but also at Les Escoumins and Havre St. Pierre. The agricultural sector is under-developed on the North Shore because of weather constraints and the lack of good farmland.

The community of Baie Comeau has a solid, quite diversified economic base built on three major manufacturing firms, Hydro Quebec's activities in the region and the delivery of government services. It is also the site of the country's largest grain storage facilities. The Reynolds aluminum smelter (1,850 employees), the Quebec and Ontario Paper Company's newsprint mill (1,550 employees) and its subsidiary Scierie des Outardes (725 employees, 500 of them in the forest) account for close to one-third of all local jobs and more than two-thirds of all manufacturing jobs on the North Shore. Baie Comeau is the departure point for Highway 389, linking Manicouagan, Fermont, Labrador City and Wabush, and is the regional service centre of Hydro Quebec, which employs more than 800 people there. It is also the regional seat of some 20 provincial government offices providing more than 500 jobs. Its grain elevators, belonging to Cargill, are used to store cargoes brought by laker from Thunder Bay; the grain stored there is then carried to Europe, the Soviet Union, the countries of the Mediterranean and Japan. This activity provides employment for about 100 people. Baie Comeau harbour is also used for shipping paper and aluminum ingots via the rail ferry to Matane.

The economy of Sept Iles is largely built on the role of its harbour as a shipping point for the iron ore mined in Labrador by Iron Ore of Canada (IOC) and Wabush Mines, the latter firm's operations in Sept Iles itself, and its role as a service centre for the Middle and Lower North Shore. Since the closure of its Schefferville mine, IOC has ceased its ore concentrate and pellet activities in Sept Iles, and now uses the railway to ship ore that has been concentrated in Labrador City. IOC remains the main employer in Sept Iles, with 900 employees for its head office and especially for rail transportation and transshipment of ore in the harbour. Wabush Mines still operates a pellet plant in Sept Iles employing 450 people. The manufacturing sector in Sept Iles consists of some 60 small businesses employing about 700 people, 240 of them in machine shops. A large proportion of manufacturing activity depends on subcontracting from mining firms and the transportation activities generated by these firms. Sept Iles has also developed as a service town, with its hospital (700 jobs), CEGEP, government offices and businesses.

The economy of Port Cartier is based primarily on the activities of the Compagnie Minière Québec Cartier. This firm employs 2,800 people in iron ore mining near Fermont, next to Labrador, in rail transportation of ore to its Port Cartier pellet plant and in its harbour facilities at Port Cartier. The harbour also houses grain silos providing 40 jobs. The opening in 1988 of a new federal penitentiary (230 jobs) and the reopening by Cascades of the former ITT-Rayonier plant (400 new jobs anticipated, including 230 in the forest) will help to diversify the local economy.

Income

Overall, the North Shore posts per capita disposable income 7% below the provincial average. This contrasts with the situation in 1981, when its income level was 11% higher than the provincial average. Sept Iles and Baie Comeau, though, enjoy income levels 8% and 2% above the provincial average, respectively.

Investment

In terms of capital investment, the $820-million project initiated in 1986 to add capacity at the Manic 5 hydro-electric plant hit its peak in 1988 and should be completed in 1989. Other major engineering projects are in progress, among them the consolidation of the Bersimis I and II dams ($70 million, 1987-1992), extension of Highway 138 between Havre St. Pierre and Natashquan ($109 million), wastewater treatment at Baie Comeau ($30 million) and construction of a fishing harbour in Sept Iles ($9 million). The region is also awaiting the start of the hydro-electric dam project on the St. Marguerite river, midway between Sept Iles and Port Cartier. Work on this project, scheduled in Hydro Quebec's development plan at a cost of more than $1 billion, could begin in 1991, with the dam scheduled for commissioning in 1998. In the manufacturing sector, the only large project initiated in 1988 is the modernization of Scierie des Outardes in Baie Comeau by the Quebec and Ontario Paper Company ($130 million by 1990). This corporation also announced that it would invest $126 million from 1989 to equip its paper mill with new thermomechanical pulp facilities.

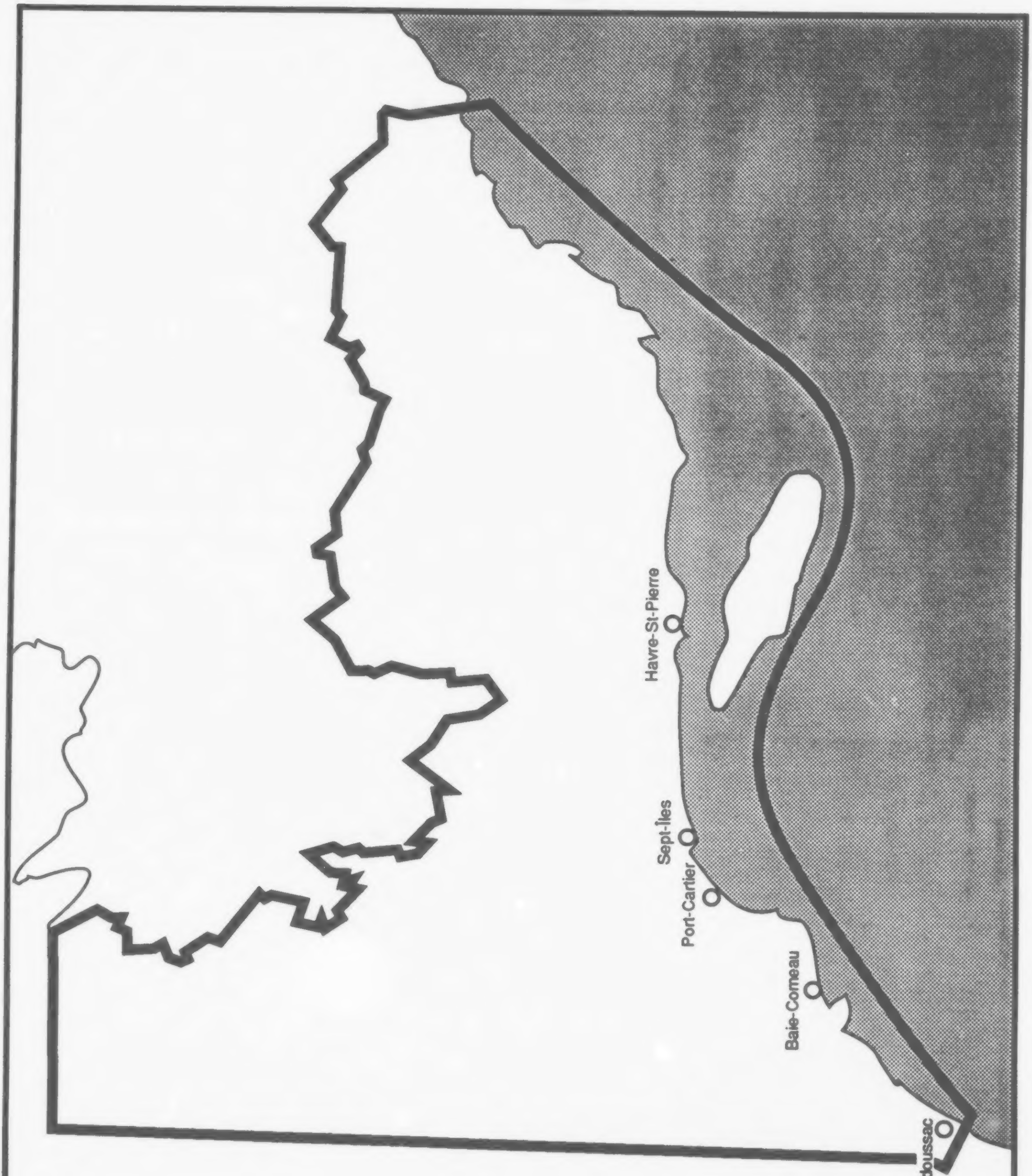
Labour market

The labour market situation improved on the North Shore in 1988, following three years of stagnation. The number of persons employed grew by 5.1%, more quickly than the provincial average of 2.8%. This employment growth, coupled with a smaller increase in the labour force (1.8%), led to a 1.2% drop in the unemployment rate, which fell to 12.1% (vs. 9.4% in Quebec).

Note:

This section presented the main economic features of Quebec's administrative regions, with particular emphasis on their main sub-regions. Analysis of the sub-regions raises considerable problems with respect to the availability of statistics. In the absence of recent, consistent data on employment by sector on the basis of regional county municipalities (RCMs), the analysis of the economic structure of the sub-regions was based on employment data as estimated by Employment and Immigration Canada on the basis of the areas served by the different Canada Employment Centres. These areas generally correspond to the boundaries of the RCMs in the resource regions, but may differ in the central regions.

09 - Côte-Nord


Havre-St-Pierre
Sept-Îles
Port-Cartier
Baie-Comeau
Tadoussac
0 25 50 Km

PART III: Structural Analysis

INDUSTRIAL RESEARCH AND DEVELOPMENT IN QUEBEC

By: Philippe Aubé
Economist

Highlights

- In Quebec, as in Canada as a whole, **more than one-half of research and development is carried out by business enterprises .**

- Slightly over **20%** of Canadian industrial research and development (IR&D) is conducted in Quebec ($872 million), with most of the remainder being carried out in Ontario (60%).

- **IR&D activities in Quebec are focused in a small number of industries** , notably aircraft and parts, electronic equipment, consulting offices and services and wood-based industries (pulp and paper, etc.). In fact, more than 50% of IR&D in the province is carried out in these four industries.

- **Quebec has a trade deficit in high-technology products.** On the other hand, for some years this deficit has held steady at around $1 billion a year, whereas the value of Quebec's international trade in high-technology products has been rising. In this respect, the sound export performance of the following Quebec industries is worthy of mention: aeronautical products, electronic equipment, non-electrical machinery and information processing quipment, and telecommunication equipment.

- The fact that Quebec spends a smaller proportion of its GDP on IR&D than Ontario does is largely due to such factors as size of firms, their ownership structure, availability of skilled staff and other socio-economic factors. **Differences in the structure of the manufacturing industries in these two provinces explain only about 25% of the gap between Quebec and Ontario in the share of GDP devoted to IR&D.**

Introduction

In a context of growing world competition, businesses must invest more in industrial research and development (IR&D) if they are to survive and grow. The following paper sketches the research and development activities conducted by business enterprises in Quebec. The first section provides an overview of the current status of industrial research and development in Quebec. The following sections cover a number of specific aspects of IR&D in Quebec, namely financing, tax incentives for IR&D, Quebec's international trade in technology, and the main factors determining whether or not IR&D is performed in Quebec. The appendix contains an explanation of the concepts used in the text, as well as a number of references.

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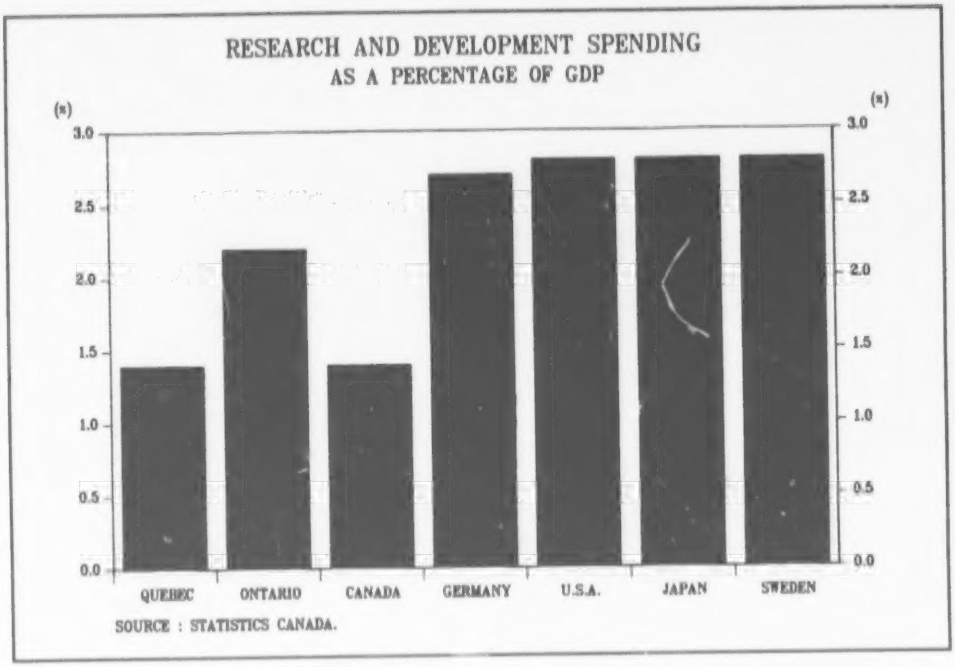
1. Overview of industrial R&D in Quebec

1.1 Scope of IR&D in Quebec

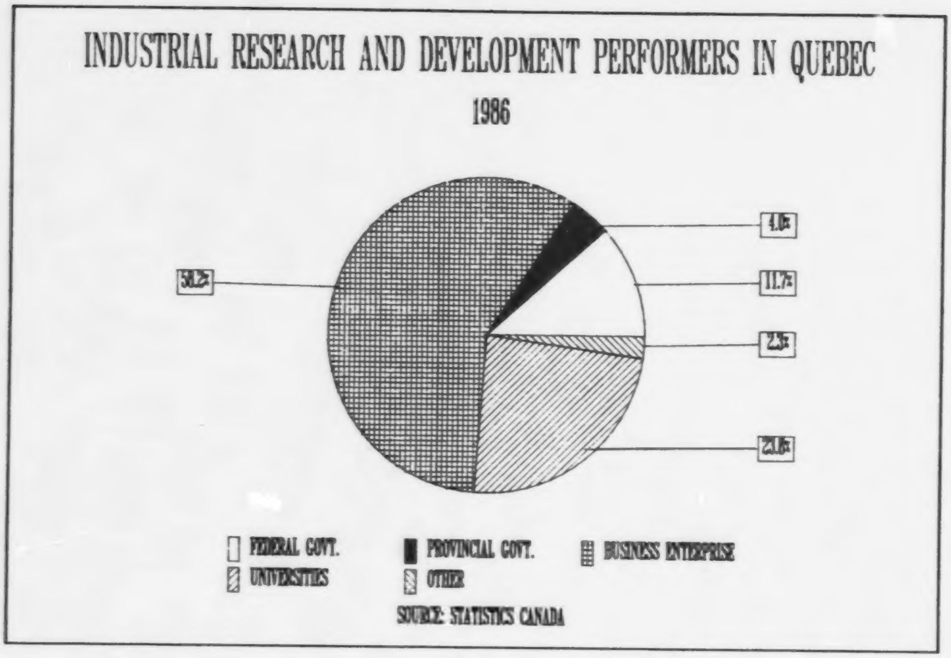
According to the latest available data (1986), Canada spends $6.8 billion on research and development activities, or approximately 1.4% of its gross domestic product. During the same period, Quebec's spending on R&D totalled $1.5 billion. This figure represents 1.4% of the province's GDP, the same as the Canadian average, but substantially less than in Ontario (2.2% of GDP) or the main industrialized countries (Graph 30).

Graph 30



A number of agents are active in the performance of R&D in Quebec, namely governments, business enterprises, institutions of higher education and private, non-profit organizations. Most R&D in Quebec (58%, or $0.9 billion in 1986) is carried out by business enterprises (Graph 31). More than 830 such enterprises in the province employed over 12,000 people in all in full-time or part-time R&D activities in 1986.

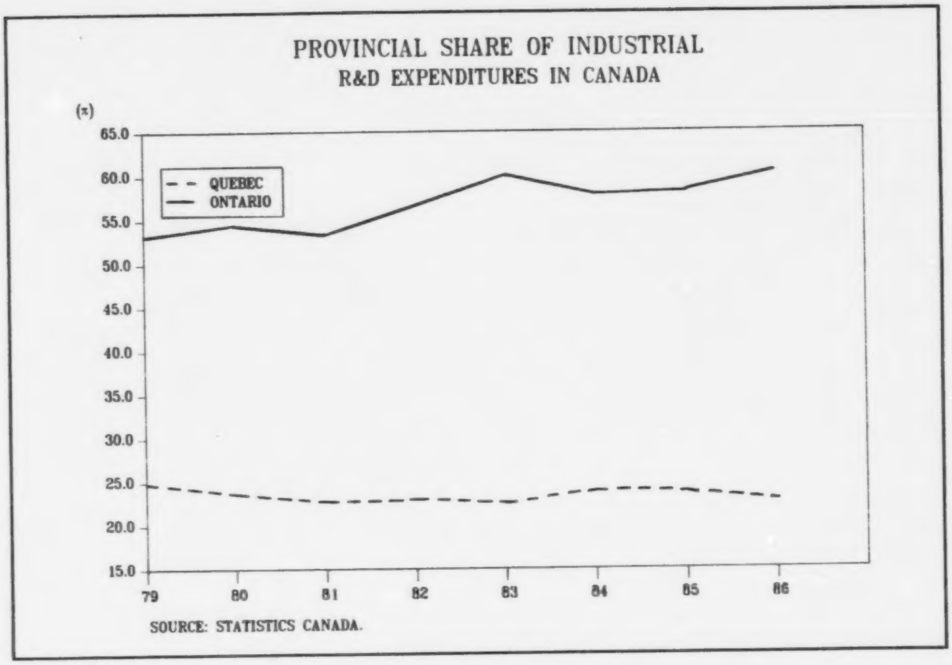
Graph 31


INDUSTRIAL RESEARCH AND DEVELOPMENT PERFORMERS IN QUEBEC
1986

SOURCE: STATISTICS CANADA

Compared with Ontario, whose share has constantly grown, recently exceeding 60%, Quebec's share in Canada's IR&D effort is rather modest. Moreover, the province's share, which lies in the 23-24% range, has remained quite steady since the early 1980s (Graph 32).

Graph 32



SOURCE: STATISTICS CANADA.

1.2 Industrial research and development by sector in Quebec

The different industries may be classified according to their level of technology (1). This kind of classification, proposed by the Quebec Department of Higher Education and Science, has five categories, namely high, medium and low-technology manufacturing industries, resource industries, and service industries. The specific industries in each category are listed in Tables 16 and 17. In the case of Quebec, this classification shows that IR&D is primarily conducted in the manufacturing sector (more than $0.5 billion in 1986), especially in high-technology industries. The resource sector performs a mere 10% of Quebec IR&D ($91 million in 1986), while the service sector conducts approximately one-quarter of Quebec IR&D ($214 million).

Table 16

Industrial research and development by sector
Québec 1986

INDUSTRIES	QUEBEC		QUEBEC/CANADA	
			IR&D	Shipments*
	$ M	%	%	%
RESOURCE INDUSTRIES	**91**	**10,4**	**33,3**	**23,5**
Wood-based industries**	48	5,5	44,0	30,3
Primary metals	31	3,6	27,0	27,4
Mining. crude petroleum and naturel gas	12	1,4	24,5	11,5
MANUFACTURING INDUSTRIES	**567**	**65,0**	**22,7**	**23,0**
High-technology industries				
Aircraft and parts	202	23,2	54,9	50,0
Electronic equipment	145	16,6	15,4	36,3
Chemical products n.i.e.*'	37	4,2	22,8	19,8
Business machines	35	4,0	15,4	12,1
Drugs and medicines	33	3,8	32,0	40,8
Scientific and professional equipment	3	0,3	6,0	20,0
Rubber and plastic products	3	0,3	15,0	24,6
Medium-technology industries				
Transportation equipment n.i.e.*'	22	2,5	19,8	9,4
Machinery	19	2,2	22,1	15,1
Electrical equipment n.i.e.*'	14	1,6	19,4	23,4
Metal fabricating	12	1,4	36,4	26,6
Low-technology industries				
Food, beverages and tobacco	16	1,8	18,2	26,3
Textiles	11	1,3	30,6	50,8
Non-metallic mineral products	2	0,2	12,5	23,2
SERVICES				
Offices of engineers	52	5,9	16,6	17,3
Transportation and other utilities	42	4,8	29,6	24,8
Computer services s	18	2,1	9,0	22,0
Other non-manufacturing industries***	102	11,7	27,9	24,2
TOTAL	**872**	**100,0**	**22,8**	**24,6**

Notes: *Proportions based on the value of shipments in the case of manufacturing industries. Proportions for services, resource industries and the grand total are based on employment.

**Includes the wood and pulp and paper industries.

*'Not included elsewhere.

***Includes the electric power industry.

Sources: Industrial Research and Development Statistics, 1986, Statistics Canada - Statistics on industrial research and development in Quebec, 1986, Quebec Bureau of Statistics.

Table 17

Trends in industrial research and development expenditures

(annual rate, 1981-1986)

INDUSTRIES	Quebec %	Canada %
RESOURCE INDUSTRIES	**5,1**	**-0,9**
Wood-based industries*	9,9	5,6
Primary metals	-2,4	0,9
Mining, crude petroleum and natural gas	14,9	-8,1
MANUFACTURING INDUSTRIES	**9,9**	**10,7**
High-technology industries		
Aircraft and parts	6,1	7,5
Electronic equipment	15,7	19,7
Chemical products not included elsewhere	15,5	11,3
Business machines	21,9	22,1
Drugs and medicines	5,7	14,6
Scientific and professional equipment	31,6	22,7
Rubber and plastic products	0,0	0,0
Medium-technology industries		
Transportation equip. other than aircraft and parts	5,3	11,0
Machinery	0,0	1,5
Electrical equipment not included elsewhere	14,9	4,4
Metal fabricating	19,1	9,5
Low-technology industries		
Food, beverages and tobacco	2,7	9,5
Textiles	9,5	10,4
Non-metallic mineral products	18,9	12,2
SERVICES	**31,2**	**28,2**
Engineering and scientific services	45,4	31,0
Transportation and other utilities	24,6	14,5
Computer services	43,1	49,0
Other non-manufacturing industries**	27,7	51,7
TOTAL	**12,7**	**12,5**

Notes: * Includes the wood and pulp paper industries.
** Includes the electric power industry.

Source: Industrial Research and Development Statistics, 1986, - Statistics Canada.

Of all manufacturing industries in Quebec, the largest R&D expenditures are made in aircraft and parts. In 1986, spending on R&D in this industry stood at $202 million, or one-quarter of all IR&D in Quebec. In fact, more than one-half of all IR&D conducted in the aircraft and parts sector in Canada is carried out in Quebec. Of the seven corporations performing R&D in this industry, the largest are Pratt & Whitney, Canadair and Bell Helicopter Textron. Since 1981, R&D expenditure in this sector has grown at an annual rate of 6% (Table 17).

The electronic equipment industry (telecommunication equipment, parts, components, and other electronic equipment) holds second place in terms of R&D spending. In 1986, the 47 R&D performers in this industry (Canadian Marconi, Bell-Northern Research, Northern Telecom, CAE, etc.) made expenditures of $145 million, or a little under 20% of all IR&D spending in Quebec. Note, however, that while 35% of the value of shipments from Canada's electronic equipment industry comes from Quebec, only 15% of the R&D in this industry is conducted in this province. Moreover, the annual rate of increase in R&D expenditures among manufacturers of electronic equipment in Quebec, while very high, has remained below the level of the industry as a whole in Canada since the early 1980s (16% vs. 20% a year, Table 17).

The Quebec chemical products industry (excluding refined petroleum and coal products and the pharmaceutical industry) also spends substantial sums on R&D. In 1986, the 56-odd R&D performers in this sector made R&D expenditures of $37 million. Approximately 23% of all Canadian research in this sector is conducted in Quebec, and this quite closely matches Quebec's share of national deliveries in this industry. The annual rate of growth of R&D spending among chemical product manufacturers from 1981 to 1986, at about 16%, was actually higher in Quebec than in Canada as a whole during that time.

Another manufacturing industry where considerable amounts are spent on research and development is business machines (computers, etc.). In this industry, not only is expenditure substantial ($35 million in 1986), but it grew at a high annual rate (22%) from 1981 to 1986 (Tables 16 and 17).

Finally, IR&D spending in the drugs and medicines industry, while substantial in monetary terms

($33 million), has grown at an annual rate of only 6% in Quebec since 1981, compared with 15% in Canada. This situation appears likely to change with the adoption by the federal government of Bill C-22 concerning pharmaceutical patents.

Of resource industries in the manufacturing sector, the wood-based industries (wood, paper and wood pulp) spend the most on R&D ($48 million in 1986). This figure reflects the fact that the Pulp and Paper Research Institute of Canada (Paprican) and such corporate research centres as Domtar and BPCO are located in Quebec. The result is that 44% of research and development activities in wood-based industries are carried out in Quebec, although the province has only 30% of jobs in the sector.

As was mentioned above, approximately one-quarter of IR&D expenditures in the Canadian service industry are made in Quebec. This is also the sector with the highest annual growth rate in IR&D expenditures (31% since 1981). The biggest IR&D spenders ($52 million in 1986) in Quebec's service sector are engineering and scientific services, such as Société de recherche SNC and Groupe Conseil Roche & Lavalin. At 17%, Quebec's proportion of IR&D expenditures made by Canadian engineering and scientific services accurately reflects the size of the Quebec component of jobs in this industry in Canada. The growth of R&D spending in this industry was also very high in the past few years, with an annual rate of almost 50% since 1981. Research conducted in these firms is primarily concerned with the enhancement, development and assessment of new concepts, processes and equipment.

1.3 Size of firms and characteristics of employment

Approximately 17% of industrial research and development expenditure in Quebec is made by relatively small companies with annual sales of less than $10 million. There are almost 600 such small businesses performing R&D in Quebec. Their average annual research and development budget is about $250,000.

Medium-sized firms with annual sales of $10-50 million made 12% of IR&D expenditures in Quebec in 1986. These companies, 138 in number in Quebec, spent an average of $750,000 a year on IR&D activities.

While some 30% of total IR&D expenditures in Quebec are made by small and medium-sized businesses, the remaining 70% or so are made by large corporations with annual sales of more than $50 million. The R&D budgets of these 118 performers in Quebec, at an average of more than $5 million a year, are considerably higher than the smaller companies'.

Among business enterprises carrying out R&D, the number of people engaged in such work also varies, depending on the size of the firm. Thus, small businesses conducting R&D employ an average of four people in IR&D activities. Note also that some 20% of all people engaged in IR&D in Quebec work for small businesses. Medium-size firms employ 14% of the people working in IR&D, with an average of 12 employees per company. The large corporations assign the largest number of people to R&D work, with an average of 68 per unit. This figure rises to 130 when one considers only very large corporations with annual sales exceeding $400 million.

Almost one-half of the people engaged in IR&D activity in Quebec are professionals with at least a Bachelor's degree. These people are employed primarily in high-technology manufacturing industries. Finally, it should be mentioned that two industries alone, aircraft and parts (23%) and electronic equipment (18%), employ more than 40% of the staff engaged in IR&D in Quebec.

1.4 Location of research and development in Quebec

Table 18 shows that the vast majority (84%) of IR&D in Quebec takes place in the Montreal area. This is a reflection of the fact that the industries which conduct a lot of IR&D are concentrated in Montreal. The main firms performing R&D in the Montreal area are listed in the Appendix. On the other hand, the concentration of IR&D in Montreal is much lower in medium and low-technology industries, as well as in the resource industries. Indeed, this situation merely reflects the regional concentration of industries in Quebec.

Table 18

Intramural IR&D expenditures by technology level of industry
Montreal and the rest of Quebec, 1986 (*)

INDUSTRIES	Montreal		Rest of Quebec		Total	
	$ M	%	$ M	%	$ M	%
High-technology industries	437	95	22	5	459	100
Medium-technology industries	38	52	35	48	73	100
Low-technology industries	21	57	16	43	37	100
Resource industries	48	53	42	47	90	100
Services	185	88	24	12	209	100
TOTAL	**729**	**84**	**139**	**16**	**868**	**100**

Note: * Excluding R&D conducted in the National Capital Region (Hull)

Source: Statistics on industrial research and development in Quebec, 1986, Quebec Bureau of Statistics.

2. Funding of industrial research and development in Quebec

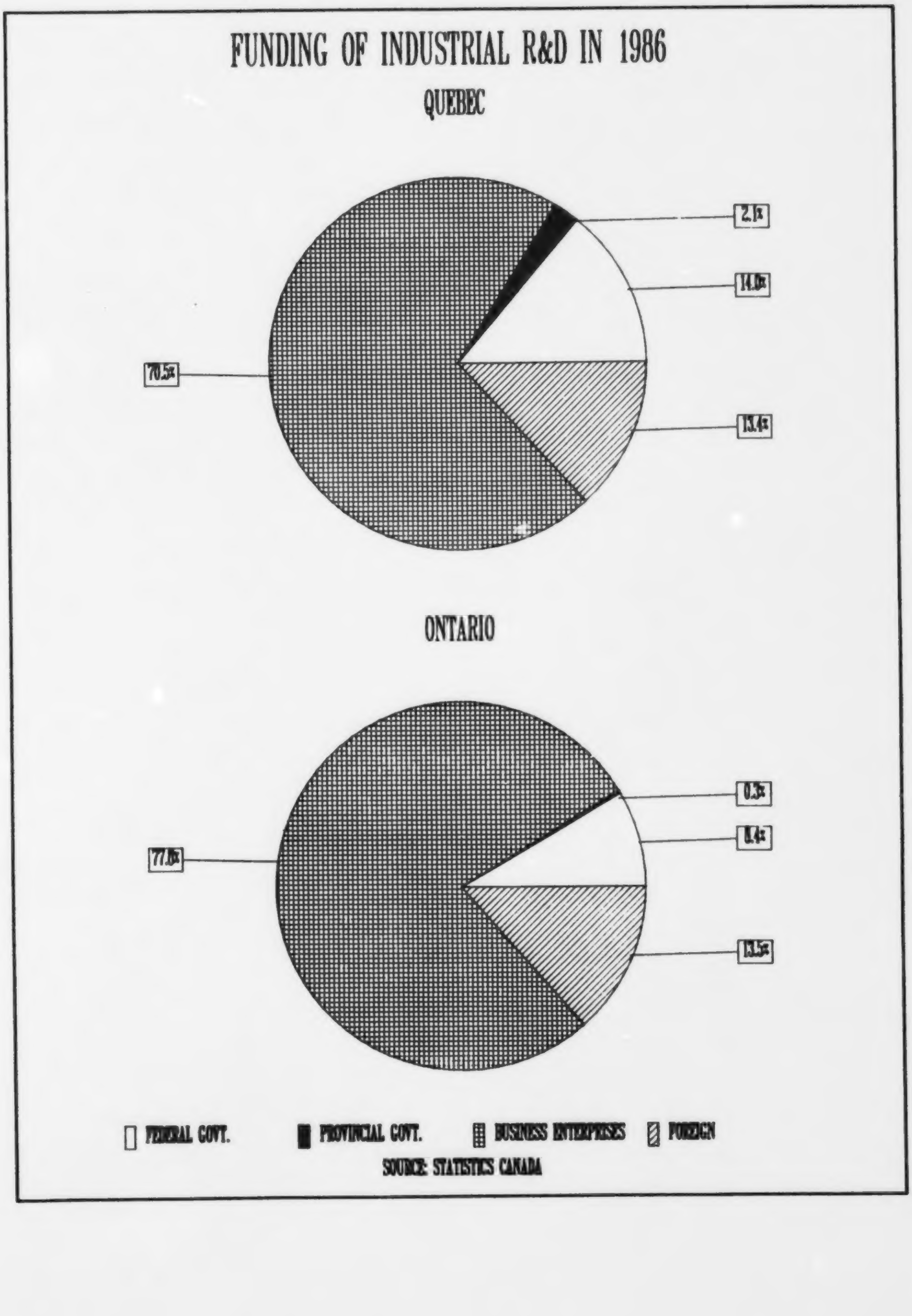
We saw above that business enterprises performed industrial research and development in Quebec worth $872 million in 1986. As may be seen from Graph 33, most IR&D funding is provided by the business enterprises themselves, in both Quebec and Ontario. But some research work was carried out by business enterprises on behalf of other economic agents, who provided the necessary funds. In this way, the federal government funds 14% of IR&D in Quebec, compared with 8% in Ontario. Federal support includes contracts and grants awarded by the federal government for IR&D work in the natural sciences and engineering. These grants are largely awarded by the Department of Regional Industrial Expansion under the Industrial and Regional Development Program and the Defence Industry Productivity Program. Finally, note that the provincial government provides funds for a mere 2% of Quebec IR&D. These figures do not include IR&D funding from tax deductions allowed by the two levels of government.

3. Tax incentives for industrial research and development in Quebec

In Quebec, both levels of government offer firms a variety of tax benefits in order to encourage them to perform more R&D. The two most common incentives are the deductions allowed in calculating corporations' taxable income, and tax credits. The deductions allowed in the calculation of taxable income allow qualified taxpayers to reduce their income by the amount of R&D expenditure allowed by the government, while tax credits are amounts that directly lower the amount of tax payable by the firm.

Investment tax credits claimed on federal returns in 1984 (last year for which figures are available) totalled $374 million in Canada, on IR&D spending of $2,360 million. Statistics Canada does not compile data on tax credits by province. At the provincial level, according to Quebec Department of Finance estimates, lost earnings due to provincial R&D tax incentives will amount to $104 million for fiscal 1988-1989.

Graph 33



SOURCE: STATISTICS CANADA

4. Quebec's international trade in technology

Quebec buys and sells both high-technology *products* and *technology* on international markets in the form of patents, licences and technical know-how. High-technology products are defined as those requiring more research and development activity than other products (1). Quebec's balance of trade in high-technology products measures the province's exports and imports of these products on international markets, whereas Quebec's technological balance of payments records trade flows between Canadian and foreign firms for the purchase and sale of technology.

Quebec's trade balance in high-technology products posted a deficit of $1 billion in 1986 (Table 19). In other words, imports of high-technology products were far higher than exports. But note that for several years now, the value of this deficit has remained stable, whereas the value of Quebec's international trade in high-technology products has more than doubled since 1979. Or to look at it in another way, while in 1979 the value of Quebec's imports of high- technology products was 2.7 times as high as the province's exports, in 1986 this ratio was only 1.5.

Table 19

Quebec's international trade in high-technology products
Quebec
($ million)

	1979	1980	1981	1982	1983	1984	1985	1986
Exports (X)	622	849	1186	1308	1431	2005	2132	2156
Imports (M)	1694	1990	2633	2083	2537	3318	2948	3166
Trade balance	-1072	-1141	-1447	-775	-1106	-1313	-816	-1010
M/X	2.7	2.3	2.2	1.6	1.8	1.7	1.4	1.5

Source: Science and technology, the situation in 1988.
Quebec science and technology council (CST).

This general description needs to be complemented by a review by sector, since there are considerable differences among the various groups of high-technology products, as may be seen from Table 19. A review of this table shows that the telecommunication equipment sector alone posted a growing trade surplus during the period from 1979 to 1986. Note, however, that in the case of the Quebec aerospace, electronic equipment and non-electrical machinery industries, exports have grown more quickly than imports during the 1980s. But Quebec still has a trade deficit in these products. Quebec's international trade in automated information processing equipment was also brisk from 1979 to 1986, but Quebec's foreign trade balance in these products none the less deteriorated. Finally, the volume of international trade conducted by the Quebec chemical, scientific instrument, electrical machinery and pharmaceutical industries stagnated during the 1980s. Moreover, aside from the chemical industry, the ratio of imports to exports by value in these industries remained very high during this period.

Table 20

Quebec's international trade in high-technology products by product group

	Imports (M) ($ million)	Exports (X) ($ million)	M / X	
			1979	1986
Aerospace products	751	561	4	1,3
Electronic equipment	719	564	7,7	1,3
Telecommunication equipment	261	475	0,9	0,5
Automated data processing equipment	392	159	1,4	2,5
Chemical products	268	183	1,4	1,5
Scientific instruments	262	71	2,7	3,7
Electrical machinery	214	74	4,5	2,9
Non-electrical machinery	202	47	20,0	4,3
Pharmaceuticals	97	22	4,8	4,4
TOTAL	3 166	2 156	2,7	1,5

Source: Science and technology, the situation in 1988.
Quebec science and technology council (CST).

Quebec produces less than 1% of the world's technology. The technology necessary for its development therefore has to be acquired through transfers (manufacturing licences, user patents, etc.). In Quebec, as in Canada as a whole, the technological balance of payments posts a heavy deficit. The most recent data on this subject for Quebec go back to 1983. That year, Quebec was a net importer of technology, with a deficit of $70 million. In fact, whereas Quebec businesses paid $97 million to other Canadian companies and foreign firms for the purchase of patents, licences and technical know-how, they sold $27 million's worth of such items to those firms.

Quebec's technological dealings with parent companies or foreign affiliates accounted for 75% of the deficit in 1983.

5. Factors influencing industrial research and development in Quebec

The intensity of industrial research and development activity in an economy depends on a number of factors, among them the industrial structure of the economy and its overall socio-economic characteristics.

5.1 Industrial structure

The industrial structure of an economy can influence the amount of research and development performed by firms in two ways. First, through the relative importance of R&D-intensive industries compared with other less intensive industries (inter-industry specialization) and, second, through the internal industrial characteristics of this economy, that is, the specific features of each industrial group making up the economy.

The internal industrial characteristics most likely to influence the amount of IR&D work that firms conduct are the companies' relative size within the same industrial group and their ownership structure. With respect to size, it is argued that large corporations are more likely to perform IR&D than smaller companies, since they have more financial resources. The extent of foreign ownership of firms in an industry can also have an impact on R&D, since foreign corporations often tend to import technology developed by their parent companies. But this is not always the case. Thus, if a foreign parent company grants an exclusive world manufacturing licence to one of its subsidiaries, this may encourage the subsidiary to conduct substantial R&D activity locally. In Quebec a case in point is Pratt & Whitney Canada (aircraft engines).

5.2 Socio-economic factors

The amount of R&D conducted in an economy also depends on a large number of socio-economic factors, of which the most frequently cited (3) are:

- market access;
- degree of protection given to the various industrial sectors;
- government assistance;
- availability of qualified researchers; and
- extent to which the population is sensitized to the importance of innovation and technological adjustment.

The impact of these factors on industry R&D activity is nevertheless difficult to measure.

5.3 The situation in Quebec

In the case of Quebec, we know that medium and low-technology industries occupy a significant position within the province's industrial structure. And we have seen that relatively little IR&D is conducted in these sectors.

The number of large corporations in Quebec is not large, and many of them are subsidiaries of foreign companies. Note that barely 1% of manufacturing firms in Quebec employ more than 500 people and that these corporations account for a mere one-third or so of the value of all the province's manufacturing shipments.

In the past, Quebec had a lower rate of university graduation in the natural sciences and engineering than Ontario or Canada as a whole. This may to some extente have been an obstacle to IR&D in the province. Today, though, this gap is narrowing, as may be seen from Table 21.

Table 21

Master's degrees and doctorates awarded in the natural sciences and engineering per 100,000 inhabitants in 1986

	Quebec	Ontario	Canada
1971	11.7	24.9	18.5
1976	13.0	20.5	15.9
1981	14.8	19.7	15.6
1986	24.6	25.2	22.3

Source: Universities, Enrolment and University Degrees Awarded, 1986 - Statistics Canada.

As far as our situation compared with the main industrialized countries is concerned, the number of researchers and scientists per 100,000 inhabitants is only 90-100 in Canada and Quebec, as against 140 in Great Britain, 150 in West Germany, 240 in Japan and 280 in the United States (4).

Finally, it is worthwhile mentioning the recent analyses (5) conducted by the Quebec science and technology council (CST) in order to determine empirically the extent to which Quebec's inter-industry specialization could explain the gap between Quebec and Ontario in terms of the proportion of their respective GDPs devoted to IR&D. The analyses showed only 25% of this gap to be due to differences in the industrial specialization of these two provinces. Quebec's IR&D activity is limited by the province's less advanced industrial specialization in the following industries: chemical products other than pharmaceuticals and petroleum by-products, primary metals, non-aeronautical transportation equipment, and electrical equipment other than communication equipment. On the other hand, 75% of the gap is due to a series of other factors (internal industrial characteristics and miscellaneous socio-economic factors) which appear to be the most notable reasons for Quebec's IR&D activity being weaker than Ontario's. These factors are more significant in the petroleum-based chemical products, business machines and communication equipment industries. But it should be remembered that the results of this study are not conclusive and depend on some basic assumptions made by its authors.

Conclusion

The amount of industrial research and development work performed in Quebec is quite modest and shows little diversification. Several factors may be cited to explain this situation.

The provincial government has set itself the goal of raising total R&D activity in Quebec to the equivalent of 2% of the province's GDP in 1992. Industry will have to provide most of the additional R&D financing, namely $540 million more in 1992 than in 1987. According to the Quebec government, the following factors make this growth possible:

- Similar growth in IR&D expenditure was achieved by Quebec firms between 1979 and 1985.

- The two levels of government are aware of the need to increase IR&D and have already set in place a number of measures designed to meet this objective (substantial grants to Quebec industry to conduct R&D in the natural sciences and engineering, adoption by the federal government of Bill C-22 concerning the pharmaceutical industry, special tax incentives affecting corporate IR&D activities, continuation and intensification of government support for technological development and transfer, education, etc.).

- The existence of major European (e.g., EUREKA) and U.S. research programs in which Quebec firms may participate.

- Quebec firms already have considerable R&D expertise in a number of fields (aircraft and parts, for instance).

- The economic climate should remain generally positive over the next few years, and the cost of new technology is tending to fall.

- As the use of new technology increases, union organizations are becoming more receptive to it.

However this may be, growing international competition will force Quebec companies to invest more in R&D, since their future and even their survival depend on it.

APPENDIX

Concepts

Data concerning research and development (R&D) relate either to the agent financing the activity or to the R&D performer. Our analysis is concerned primarily with industry as a source of R&D funding.

Data concerning industrial research and development (IR&D) cover research and development carried out by industry, Crown corporations, and industrial research institutes and associations, that is, the different business enterprises, both private and public.

The different R&D performers may carry out this activity within their organizations (intramural R&D) or have them conducted by other, independent organizations (external R&D).

Data concerning the province refer only to IR&D performed in Quebec. Thus, IR&D conducted by Quebec firms outside the province would not be recorded under Quebec.

Notes

(1) There is no internationally accepted definition of high-technology products. The most frequently used criterion is that such products require more R&D than other products. More specifically, the method involves calculating the mathematical mean of R&D expenditure as a percentage of product sales, for each product category, and naming as high-technology products those categories lying above the mean. Indeed, this is the criterion used by both Statistics Canada and the Quebec science and technology council (CST).

(2) Science et technologie, conjoncture 1985 (Science and technology, the situation in 1985). Vol. 2. Quebec science and technology council (CST), 1986, p. 67.

(3) Idem, p. 64, and Science et technologie, conjoncture 1988 (Science and technology, the situation in 1988). CST, 1988, p. 120.

(4) La maîtrise de notre avenir technologique, un défi à relever (Mastering our technological future: the challenge). Quebec Department of External Trade and Technological Development. June 1988, p. 40.

(5) Science et technologie, conjoncture 1985 (Science and technology, the situation in 1985). Vol. 2. CST, 1986, pp. 64-67 and 70-71.

(6) La maîtrise de notre avenir technologique, un défi à relever (Mastering our technological future: the challenge). Quebec Department of External Trade and Technological Development. June 1988, pp. 40-41.

APPENDIX

Main industrial research centres Greater Montreal

Industry and centre	Main activities	R&D employees
Primary metals		
Noranda	Development of methods and mining equipment	97
Wood-based industries		
Pulp and paper Research Institute if Canada (PAPRICAN)	Development of new pulp and paper products and processes	
Domtar	Product research (salt, wood processing, building products, pulp and paper, etc.)	118
Aircraft and parts		
Pratt & Whitney	General and applied research on aifcraft engines	1 477
Canadair	R&D on different aircraft types and surveillance systems	325
SPAR Aérospatiale	Satellite telecommunication systems	170
Bendix Avelex	Electro-optical aerospace products	88
Bell Helicopter Textron	Manufactured products enhancement research (helicopters)	61

APPENDIX

Main industrial research centres in Greater Montreal (cont'd)

Industry and centre	Main activities	R&D employees
Electronic telecommunication equipment		
Recherche Bell-Northern	Telecommunication and systems operation research	284
Northern Telecom	Development of communication products and processes	188
Technologies MPB	R&D in telecommunications, electro-optics and fusion	93
SR Telecom	Telecommunication system design	74
Other electronic equipment		
Marconi	Avionics navigation, detection and flight management systems	360
Matrox	Computer graphics systems and circuits	250*
CAE Électronique	Development of flight simulators	155
Philips	Microcomputer design	150*
XIOS	R&D in office automation	60
Circocraft	Development of printed circuits	53

APPENDIX

Main industrial research centres in Greater Montreal (cont'd)

Industry and centre	Main activities	R&D employees
Unisys Canada	R&D on electronic power supplies	43
Comterm	Development of communication terminals, controllers and other peripheral units	39
Paramax	Artificial intelligence	8*
Drugs and medicines		
Bio-research	Pre-clinical and clinical safety testing for other companies	345
Merk Frosst	Basic pharmaceutical research	120
Bio Méga	Development of immodiagnostic kits, antiviral drugs and cardiocascular medicines	76
Laboratoires Nordic	Development of pharmaceuticals for cardiology, gastroenterology and treatment of diabetes and burns	38
Ayerst, McKenna & Harrison	R&D on pharmaceuticals	36
Burroughs Wellcome	R&D on pharmaceuticals	16

APPENDIX

Main industrial research centres in Greatr Montreal (cont'd)

Industry and medicines	**Main activities**	**R&D employees**
Pfizer	Veterinary clinical research	8
Laboratoires Abott	Process studies	3
Scientific and professional equipment		
Foxboro	Design of techniques and instruments	5
Non-metallic products		
Ciments Canada Lafarge	Development of new concrete products, new cement formulas and higher-prformance equipment	35

Notes: This is not a complete listing.

*Approximate figures

Sources: Le Devoir économique, Vol. 3, Mai 1987
Scientific research and experimental development in Quebec, 1987-1988 Directory. Quebec industrial research institute (CRIQ).

DISSEMINATION OF TECHNOLOGY

By:Claude Valiquette, Economist
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This article deals with the adoption of new technology in the Quebec economy. First, it presents a theoretical section on the process of technological change, the strategic approach to the adoption of new technology and the factors and obstacles influencing the dissemination of technology. Then the current status of the dissemination of technology in Quebec and Canada is analysed on the basis of the main indicators available.

1. Process of technological change

The overall process of technological change may be broken down into three main parts: invention, innovation and dissemination. The first stage, invention, is the basic research phase where ideas for new or enhanced technology germinate. Next, technological innovation corresponds to the first commercial application of the invention. Innovation may take place in processes as well as in products. Finally, the dissemination of technology represents the spread and adoption of innovation in the production apparatus, that is, the industrial application of the technology available on the market. The boundaries between these three main parts are not rigid. Rather, the process of technological change should be viewed as a continuum into which research and development are tightly interwoven.

Innovation does not necessarily incorporate high technology. It may merely involve improvements or modifications to a product or process, often in response to the pressures of demand or to technological opportunities. At the other extreme, some innovation may generate major changes in the structure and production and distribution conditions of the whole economy, as in the case of information technologies.

Industry may have access to new technology without having to pass through the three parts of the process in-house. Thus, a number of companies will choose to acquire the necessary technology from outside firms or organizations. In this respect, large corporations, universities, research centres, equipment suppliers and brokers are vehicles for the dissemination of technology. In fact, most of the economic benefits arising from new technology are the outcome of their dissemination in the economy as a whole, rather than of their initial development.

The application of new technology is a critical factor in the competitiveness of industry, which must adapt quickly to the economic and technological environment by identifying and harnessing the opportunities offered by new technology. And firms must choose a strategic approach to the acquisition of new technology.

2. Strategy for adopting new technology

Which is more to a company's advantage, to develop technology itself or to acquire it from outside? Generally speaking, intramural R&D yields technology more closely geared to the firm's needs as well as greater technological independence, although the risks and costs involved are much higher. On the other hand, purchasing technology involves less of a risk and is less expensive for the company, but may provide access to technology that becomes obsolete more quickly.

Above all, the choice is a strategic one: does the firm wish to commit itself to a strategy of technological leadership or a strategy of technological adoption? One path is not necessarily better than the other.

In this context, a study (1) prepared within the framework of the recent Quebec technology summit analyses the dynamics of technological innovation in six industries in Quebec and shows clearly that the desire for technological innovation can be expressed in different ways. While some firms will choose a strategy of technological leadership through in-house development of new technological applications, others will opt for a strategy of rapid adoption of technology developed by outside agents. One particular type of innovation cannot be applied to all firms, but must be adapted to the company's needs, its internal dynamics and external environment.

Thus, most pharmaceutical and computer service firms studied in this paper adopted a strategy of production through intramural R&D of highly diversified products in response to an environment characterized by a high level of technological activity. But most pulp and paper companies and some metal fabricating firms covered by the survey chose instead a strategy of rapid introduction of new processes in an environment characterized by exceptionally stiff competition.

The choice of an appropriate technological strategy may thus be essential if a company is to remain competitive and even survive. An OECD study (2) points out that this strategic choice is all the more important for an industrialized economy where businesses and the national market are small, a fair description of the Quebec economy. Local small and medium-sized businesses must then compete with firms from newly industrialized countries which, as well as enjoying advantages in terms of labour costs, now have access to more sophisticated technology which allows them to penetrate sectors where the technology is relatively simple or mature. In addition, small and medium-sized businesses are generally not large enough to benefit from the economies of scale so often necessary in high-technology sectors.

Too few analyses have been conducted to date to be able to infer an optimum technological strategy model for small and medium-sized businesses in this context of growing world competition. It does appear, however, that the adoption and modification of existing technology could offer greater potential than the development of new technology for small and medium- sized businesses in high-technology industries.

3. Factors influencing the dissemination of technology

The rate at which technology is disseminated within an economy depends on a series of factors, some of them specific to the economic environment in which companies must operate. Examples of such factors are competitive pressures on firms, technological infrastructure (research centres or high-technology parks, for instance), and availability of venture capital.

Aside from these environmental factors, a number of other, internal considerations influence each firm's decisions with respect to the adoption of new technology. These internal factors concern the firm's level of technical, commercial and financial risk, its executives' attitudes toward and competence in technology, and the management challenges its adoption will present.

3.1 Internal factors

Technical aspects

The quality and relevance of the information available to the firm on technology and the technical risk a new technology represents are two closely linked aspects of decision-making where adoption of technology is concerned.

Although there is an impressive amount of general information on the available technology, it is actually no easy task for a company to identify the appropriate technology and potential suppliers of technology, or the best way of integrating technology into the company. Among questions the firm must answer if it is to identify the appropriate technology are the following:

- Will the technology being considered fulfil its promise on the technical front?

- Will the adoption of this technology require a major adjustment of the firm's manufacturing operations? How long will this adjustment take?

- Is the proposed technology likely to become obsolete quickly?

Economic and financial aspects

First of all, the adoption of a new technology by a company represents a commercial risk for the firm. Indeed, the adoption of this technology will have repercussions in terms of increased production volume or the introduction of new products. The company will have to try to determine whether the market is ready to absorb this higher production volume or these new products or whether the targeted market is accessible to the firm. The question of market access is particularly important for a country such as Canada whose domestic market is very limited. Assessment of the commercial risk should not be taken for granted, and presents some difficulties. The problem of quantifying the anticipated costs and benefits can in fact be a major obstacle for small and medium-sized businesses when it comes to obtaining financing.

The cost of acquiring technology is also a major impediment to the introduction of new technology.

This factor is particularly significant for small and medium-sized businesses, whose financial resources are often limited.

Human resources

The attitude of the firm's executives will influence the adoption of new technology. Several studies actually show that the profile of senior company management (in terms of age, education or technical training) is directly linked to their attitude to innovation (3) and that this attitude is one of the main stimuli for the introduction of new technology within a company (4). The availability of the technology management expertise and skills within the firm, while not the most important factor, has a considerable impact on the firm's ability to adopt new technology and therefore on its decision as to whether or not to proceed with the adoption of new technology.

3.2 Environmental factors

The extent and speed with which technology is disseminated are also affected by the environment in which firms evolve.

Competitive pressures

First of all, competitive pressures in the industry are the main factor in the firm's environment that determines the speed with which it adopts new technology. To remain competitive in terms of price and quality, and often even to survive in a highly competitive sector, businesses must innovate rapidly in terms of products and processes. This applies as much to high-technology firms as it does to companies in mature sectors facing stiff foreign competition. There will thus be a close link between the intensity of competitive pressures and the level of technological activity.

Close interaction of the firm with its suppliers on the one hand and its customers on the other is also likely to increase the dissemination of technology. Thus, the company will be able to take advantage of the technology with which its suppliers are in a position to provide it in order to enhance its production processes. Moreover, by being attentive to the specific needs of its customers, the firm thus gains access to market information which will be able to stimulate innovation in terms of processes.

Technological concentration

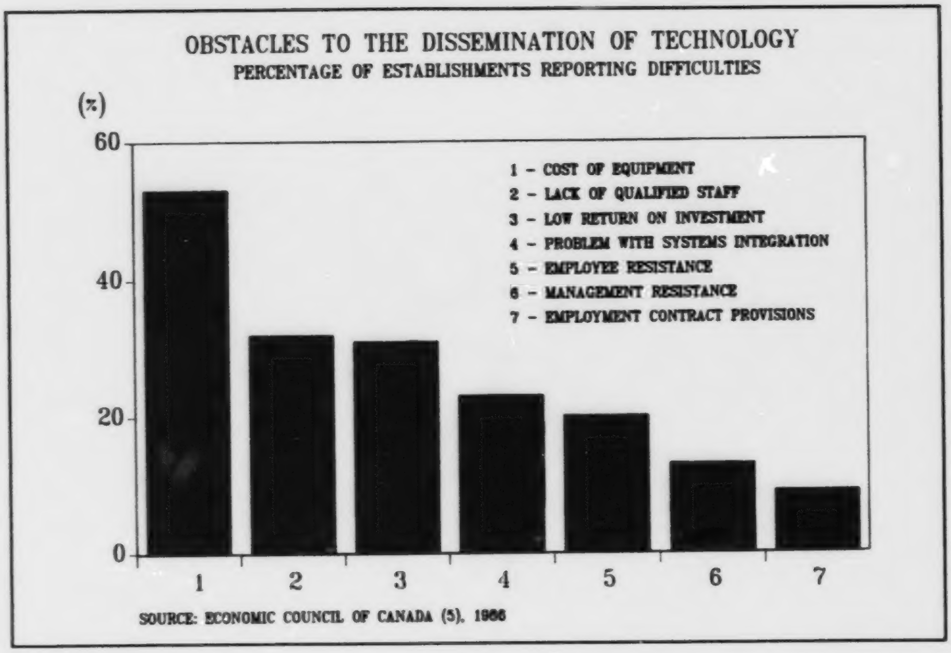
The presence of areas of high technological density, that is, of areas with a strong concentration of high-technology companies, research centres, universities and technology brokers, will also encourage the dissemination of technology through the contacts to which it gives rise. Among other things, technological concentration facilitates technological sponsorship, where a large corporation supports a smaller business in order to meet some of the corporation's specific needs while providing the smaller firm with the necessary technological information. The swarming effect is also facilitated by technological concentration. Here, benefitting from technological experience gained within large corporations or research centres, potential entrepreneurs leave these organizations to form their own businesses in specific technological sectors. In this way, for instance, Bell-Northern Research in the Montreal area was behind the creation of several high-technology firms.

Finally, a number of other factors in the innovation climate can also influence the dissemination of technology, among them: government policies and regulations, the level of scientific training, and society's attitude to progress.

4. Obstacles to the dissemination of technology

The OECD study (2) mentions several obstacles to the dissemination of technology in Canada, the most important of which is the dearth of qualified staff which affects the level of R&D in industry. The other obstacles raised are the level of foreign ownership of industry, the small size of companies and the cost and availability of capital. A survey conducted by the Economic Council of Canada (5) on Canadian establishments confirms these findings, particularly stressing the cost of equipment (see following table).

Graph 34



It should be pointed out here that the firms surveyed in the Economic Council of Canada study may have mentioned one factor more regularly without that factor necessarily being the main impediment for the firm. Both studies note, however, that employee resistance to technological change is not often cited by companies as an obstacle to the adoption of new technology in Canada.

5. Current situation in Canada and Quebec

Canada cannot produce on its own all the high-technology it requires to be competitive, nor can it manufacture competitively all the high and medium-technology products using such advanced technology. Canada therefore has to import a large proportion of these products for use as intermediate commodities. Trends in Canada's trade balance in high and medium- technology products may thus serve as a rough measure of the rate of dissemination of technology in Canada.

Table 22

Canadian trade balance for certain groups of manufactured products

	High technology	Medium technology ($ million)	Low technology
1971	- 1967	-1512	- 812
1984	-11974	-6114	-4453

Source: Statistics Canada, 1985 Technology and Trade Statistics: section 1.

As the table shows, Canada's negative trade balance for high and medium technology products has grown rapidly since 1971. In line with the above considerations, however, this development may be seen as the price to be paid for increasing the international competitiveness of Canada's traditional industries. But trends in Canada's trade balance provide us with only a very incomplete indication of the dissemination of technology in Canada. We will use more direct indicators to describe the current situation in Canada and Quebec.

5.1 Situation in Canada

A review by the Economic Council of Canada (6) of the period from 1960 to 1979 showed an 8.7-year time lag between the introduction of a new production process in the world and its adoption in Canada. In the case of a new product, the time lag was 7.4 years. These are substantial delays.

A comparison of these findings with those of a study by McFetridge and Corvari (7), however, places them in perspective.

McFetridge and Corvari estimated the average delay in international dissemination on the basis of a data bank on multinational corporations and the Economic Council of Canada data bank.

Table 23

Estimated average delay in international dissemination 1960-1979

	Average delay (years)
Data bank on international corporations	
Canada	7.11
Europe	10.42
Rest of the world	11.70
Economic Council of Canada data bank	
Canada	5,80

Source: McFetridge, D.G. Corvari, R.J. (7)

These estimates appear to indicate that the average age of technology transferred to European countries and other countries of the world is higher than that of technology imported into Canada. Part of the explanation no doubt lies in the importance of the role played by subsidiaries of U.S. multinationals in the Canadian economy. The fact remains that, based on these figures, the time lags estimated in the Economic Council of Canada study mentioned above appear less unfavourable to Canada. Quite clearly, the findings of both studies should be used with caution.

The Council also conducted a survey in 1985 on the dissemination of technology in the industry (5). This survey obtained information from 946 primary, secondary and tertiary sector organizations of all sizes across Canada. Approximately 45% of respondents were from the manufacturing sector. The survey showed a substantial rate of automation in Canadian industry during the period from 1980 to 1985, but it also revealed that, none the less, Canada still lagged far behind the other industrialized countries. More specifically, the survey showed that:

- some 62% of the manufacturing firms consulted adopted office automation innovations during the period from 1980 to 1985;

- the dissemination of industrial automation (automated material handling systems, computerized numerical controls, CAD, CAM, computer-based quality inspection and control) was, however, much lower, since only 43% of manufacturing firms participating in the survey said they had adopted any of the above techniques;

- one-quarter of the manufacturing firms had adopted computer-assisted manufacturing techniques;

- fewer than 15% had adopted computer-aided design (CAD), automated handling, computerized numerical controls (CNC) or quality inspection and control.

Unfortunately, little information is available to enable us to draw comparisons between Canada and other countries with respect to the use of high-technology equipment. In fact, all that can be done in this regard is to measure the degree of penetration of numerically controlled (N/C) machine tools and industrial robots.

In 1983, N/C machine tools represented only 4.4% of all machine tools purchased in Canada. This placed Canada well behind Japan (38.1%), the U.S. (12.9%) and the U.K. (8.1%) that year.

N/C machine tools are used primarily in the machinery and metal work sectors. It is, however, worthwhile emphasizing the fact that in Japan approximately 20% of N/C machine tools in 1983 were used in other industries: textiles (10%), pulp and paper and plastics (7%), and printing and sawmills (3%). Canadian firms in these sectors, accounting for a substantial share of the country's manufacturing activity, have made only minimal use of N/C machine tools to date.

In 1984, Canada was ninth among the main industrialized countries in the use of robots. There were only 3.7 robots per 10,000 jobs in Canada, compared with 32.1 in Japan, 20.2 in Sweden, 7.2 in West Germany and 4.7 in the United States.

It must also be realized that Canada's tardiness in using these two types of equipment is largely due to the differences in industrial structure between Canada and the other industrialized countries. This is especially true for robots, which to date have been used mainly in the automobile industry.

Several other factors relating to Canada's industrial structure may also explain the difference between Canada and the other industrialized countries with respect to the use of high-technology equipment. The average size of companies is one of them. The type of market targeted and the focus on foreign markets are other important factors. Indeed, in the latter case, it is probable that the limited Canadian domestic market has slowed down the dissemination of advanced technology in Canada, particularly in certain industries geared primarily to the domestic market.

Statistics Canada conducted a study in 1987 on the dissemination of advanced manufacturing technology in Canada (8). Carried out within the framework of the monthly survey on inventories, shipments and orders, this study covered all manufacturing industries. Respondents represented approximately one-half of the estimated value of manufacturing industry shipments in 1986.

The fact, however, that the survey covered only medium-size or large businesses no doubt biased the results by overestimating the dissemination of advanced technologies. Inter-provincial comparisons must also be interpreted with caution, as they were established on the basis of a series of dissimilar technologies. None the less, these comparisons provide valuable information on the situation in Quebec.

Across Canada, one-half of the firms questioned for this survey used at least one of the following categories of technology:

- communication and control (programmable controllers, local area networks);
- fabrication and assembly (numerically controlled machines, flexible manufacturing cells and systems, laser-based fabrication equipment, robots);
- computer-aided design and engineering;
- computer-based inspection;
- automated handling systems.

In terms of the proportion of Canadian establishments using or intending to use at least one of these technologies, the following five manufacturing groups were the most dynamic:

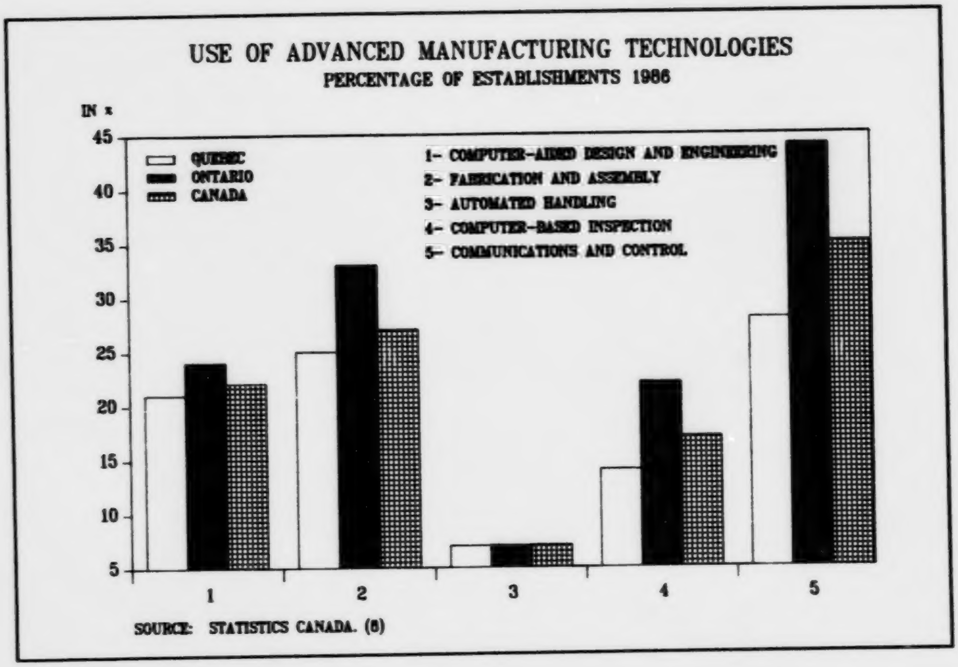
- primary metals (75%);
- electrical and electronic products (73%);
- machinery (66%);
- paper and allied products (64%);
- transportation equipment (64%).

Quebec accounts for a major share of activity in Canada in the primary metals and paper sectors, but Ontario quite clearly leads in the other sectors, except for the aeronautics industry (transportation equipment).

5.2 Situation in Quebec

Graph 35 also shows, according to the same Statistics Canada survey, a significant difference between Quebec and Ontario in terms of the penetration of technology groups.

Graph 35



USE OF ADVANCED MANUFACTURING TECHNOLOGIES
PERCENTAGE OF ESTABLISHMENTS 1986

SOURCE: STATISTICS CANADA. (6)

As can be seen, the difference between the two provinces is significant for three technology groups.

Table 5.3 shows the share of Quebec and Ontario manufacturing units using as least one of the advanced manufacturing technologies chosen for this survey. Several points emerge clearly from this table:

- for the traditional industries (food and beverages, leather, textiles, clothing and furniture), the relative share of establishments using at least one of the advanced technologies identified is low;

- the use of advanced manufacturing technologies appears to be more widespread in Ontario than in Quebec for the traditional industries, with the gap being especially wide for the food and beverage industry.

Table 24

Percentage of establishments using at least one technology

1986

	Quebec	Ontario
	%	%
Manufacturing industries		
Food and beverage	37	54
Rubber and plastics	45	70
Leather, textiles, clothing	34	44
Wood	36	42
Furniture and fixture	33	33
Paper and allied products	59	65
Printing and publishing	46	44
Primary metal	76	79
Fabricated metal products	52	63
Machinery	69	74
Transportation equipment	59	76
Electrical and electronic products	57	80
Non-metallic mineral products	69	64
Petroleum and chemical	63	60
Other manufacturing	32	41
Total, manufacturing	45	57

Source: Statistics Canada, 1987, (8)

- for the resource processing industries (rubber and plastics, wood, paper and allied products, primary metal, non-metallic mineral products, and petroleum and chemicals), the use of advanced manufacturing technologies appears to be more widespread in Ontario than in Quebec, except in the case of the non-metallic mineral products and petroleum and chemicals industries;

- the use of advanced manufacturing technologies seems considerably more widespread in Ontario than in Quebec in the capital goods industries (metal fabricating, machinery, transportation equipment and electrical and electronic products);
- for the manufacturing industries as a whole, Ontario appears to be considerably ahead of Quebec.

In 1985, the Quebec Department of Industry and Commerce (MIC) compiled a list of the manufacturing equipment used by firms working with metal (9). The following industries were covered: fabricated metal products, machinery, transportation equipment and electrical and electronic products.

This study provided information on the use of computers for management or manufacturing processes in 746 companies. In this regard, its findings are very valuable. On the other hand, as we have just seen, it dealt with only a small number of sectors.

The findings presented in Table 25 show that the larger a company is, the more it uses computers.

The table also shows that computers are more widespread in management processes than in production. The sectors making the most use of computers for management are also the largest users of computers for production.

The sectors making the greatest use of computers are not the same, however, depending on whether one looks at firms with 99 employees or less or at larger companies. For businesses with 100 or more employees, the largest computer user is the transportation equipment industry: this is largely due to the presence of major corporations in the aeronautics field. For smaller firms, the largest proportion of computer users is to be found in the machinery and metal fabricating sectors.

Table 25

Percentage of companies using computers for management or production purposes Quebec, 1985

	1-19 empl.	10-99 empl.	100-499 empl.	Total
Computer in management				
Metal fabricating	13	51	84	36
Machinery	18	59	96	50
Transportation equipment	3	42	100	30
Electrical and electronic products	-	-	-	57
Computers in production				
Metal fabricating	4	20	34	13
Machinery	7	25	52	21
Transportation equipment	3	18	57	13
Electrical and electronic products	-	-	-	21

Source: Quebec Department of Industry and Commerce (9).

In 1985, some researchers from the University of Quebec in Montreal (UQAM) conducted a survey of 1,949 Quebec firms in the manufacturing, trade and service sectors (10); 849 firms (44%) responded to the researchers' questionnaire.

The proportion of manufacturing sector firms with computer equipment (73%), according to this survey, is lower than the proportion for firms in trade (76%) or services (85%).

Of small manufacturing firms (less than 100 employees), 62% are not very, or not at all, computerized (that is, they use their computer equipment for no more than two applications: accounting, finance, CAD, CAM, word processing, etc.). For medium-sized businesses (100-499 employees), the proportion is 23%, while for large corporations it is 11%. Three-quarters of major corporations use their computer equipment for five or more applications, whereas the figure for small business is only 12%.

The following table gives a more accurate idea of the penetration of different applications for computer equipment.

Table 26

Percentage of manufacturing firms using computer applications

Quebec, 1985

Application	**Small** %	**Medium** %	**Large** %
Accounting/finance	59	92	93
Inventory management	35	61	79
Personnel management	36	71	82
Operational management	24	53	82
CAD	-	9	43
CAM	-	15	43
Word processing	24	45	86
Electronic mail	-	11	29
Archival storage	-	9	14
Teleconferencing	-	2	21

Source: Lefebvre, Louis-A. et Elisabeth, Ducharme, Jean (10)

Whereas applications relating to accounting/finance, inventory management and personnel management are quite widespread, the same cannot be said for computer-aided design or computer-aided manufacturing.

A report entitled "Bilan et impact des nouvelles technologies sur la structure industrielle du Québec, 1985, 1991 et 1996" (Summary and impact of new technology on Quebec's industrial structure) (11) was drafted for the 1988 Quebec technology summit by researchers at the University of Quebec at Trois Rivières (UQTR) and the Quebec scientific research institute (INRS).

This study dealt with 55 industries in all three industrial sectors. The researchers' survey was neither exhaustive nor based on samples. The researchers used the combined information from various sources to estimate the penetration level of new technology in each industry studied.

Among other things, the researchers used information from well-informed resource-persons (government sectorial exports, sector associations, etc.) and visits to a number of establishments representative either of advanced technology (as used in this industry in Quebec) or of the technology most frequently used in Quebec. The results obtained were thus dependent, as the authors explicitly acknowledge, on the quality of the information on which they based their estimates. They also depend on the assumptions used concerning the factors likely to influence the rate of dissemination of new technology (trends in demand, financing capability, average age of equipment, etc.).

The findings appear in Table 27. As may be seen from the table, the level of penetration in 1985 was generally rather low. Exceptions are to be seen in sectors with large corporations conducting major R&D activity (aeronautics, pharmaceuticals and telecommunications), as well as sectors lending themselves well to the automation of manufacturing processes or in which heavy or continuous production processes are often found (chemical products, organic products, copper refining, commercial printing, sawmills and plastics).

Table 27

Dissemination of new technology by sector

Sector	Level of penetration (%)*	
	1985	1991
Pulp and paper	5	15
Aluminum	20	50
Bakery products	15	60
Aircraft	75	100
Metal work	15	20
Wire	30	95
Glass	30	50
Textiles	10	75
Telécommunications	40	55
Major appliances	0	60
Sawmills	50	70
Industrial electrical equipment	0	15
Inorganic chemical products	50	80
Plastics and resins	40	80
Corrugated boxes and paper bags	10	70
Pharmaceuticals	40	60
Organic chemical products	0	45
Ciment works	10	40
Commercial printing	55	75
Clothing	5	100
Knitting mills	5	100
Copper refining	50	60
Steel	40	80
Dairy products	20	35
Doors and frames	-	60
Furniture	0	30
Footwear	50	100
Refineries	100	-
Stamped and pressed metal products	100	-

-: Not available

Note: * Level of penetration refers here to the proportion of Quebec production using new technology (as identified by industry experts).

Source: Julien, Pierre-André, Thibodeau, Jean-Claude (11)

As may be seen from Table 5.6, the situation is expected to develop quickly between now and 1991. The speed of developments partly depends on the definition of new technology: in this study, new technology was defined as the most advanced technology currently in use in the sector in question in Quebec. That explains, for instance, why 100% new technology penetration is anticipated in the clothing industry in 1991: it is expected that equipment in that sector will improve considerably over the next few years, although the robotization phase will not yet be reached.

For a number of sectors, on the other hand, the penetration level anticipated in 1991 may seem low at first glance. Several explanations are possible: low expected growth in demand, limited production mandate, shaky financial health, or equipment not yet amortized. It must also be borne in mind that the dissemination level shown in the table is estimated on the basis of the proportion of Quebec production using new technology. In industries dominated by a few large, high-performance establishments (aircraft, for instance), the dissemination level will be very high. If, on the other hand, a substantial part of Quebec output is produced by means of technology defined as not new, as is the case here for the pulp and paper sector, the dissemination level will be low.

5.3 Conclusion

The dissemination of technology appears to be slower in Canada than in the other industrialized countries. This is due to a number of factors: different industrial structures, types of markets targeted, focus on foreign markets, limited domestic market, intensity of R&D activity, and number of researchers and technicians.

Generally speaking, Quebec is behind Ontario, so the province lags far behind the industrialized countries other than Canada.

The fact that Quebec is behind is partly due to the province's industrial structure, which is in fact highly dependent on traditional industries or slow-growth sectors (textiles, clothing, footwear, furniture, and food and beverages). These are not generally industries in which technology spreads rapidly, even in other countries. This is due to a number of factors: technical difficulties in automating operations, shaky financial position, strategic focus on marketing rather than enhancement of manufacturing processes, etc.

Moreover, the proportion of jobs in small and medium-sized manufacturing firms is larger in Quebec than in Ontario or the United States. Whereas in Quebec in 1982 31.0% of manufacturing employment was in companies with fewer than 100 employees, the figure for Ontario was only 22.5%, almost the same as for the U.S. (22.8%). This factor is quite significant, considering that the dissemination of technology is slower in small and medium-size businesses than in large corporations.

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THE QUEBEC PAPER INDUSTRY

By: Diane Bellon, Economist

1. BACKGROUND

The harvesting of forest resources for pulp and paper production began in late 19th century Europe. In North America, Quebec played a leading role from the inception of the industry, owing both to its abundant forests of suitable quality and to its abundant hydro-electric power and freshwater. Thus, the first mechanical pulp mill in North America was established in Valleyfield in 1866, the first chemical pulp mill in Windsor Mills, also in 1866, and the first pulp mill to use the sulphate process in East Angus in 1907.

Strong growth in demand for newsprint in the United States and the removal of the U.S. tariff on newsprint in 1913 allowed the Quebec industry to enjoy a strong boom from early on in the century. Until the mid- 1950s, Quebec newsprint reigned supreme on the U.S. market. Newsprint shortages during World War II and the post-war years, however, generated a climate in the United States conducive to the development of its own forest network. Canadian producers' share of the American newsprint market thus fell from 72% in 1965 to 64% in 1970, and 57% in 1986.

During the 1960s and 1970s, the Quebec industry experienced ups and downs, depending on the North American economic situation. From late 1978 until early 1981, the industry posted record profits, and a large number of firms initiated plant modernization, which was now essential if they were to maintain their position as world leaders. But this modernization was slowed because of highly unfavourable economic conditions in late 1981. This recession, which lasted until 1983, even forced a number of paper companies to temporarily suspend operations. On the other hand, the past few years have seen great optimism as prices and demand have been on the rise: it is estimated that the profit margins of paper companies hit new highs in 1987 and 1988, and 1989 should continue in the same vein.

2. QUEBEC OUTPUT

The dominant position of newsprint as the main product of the pulp and paper industry may be seen from the first Canadian statistics available on paper (1917). Even today, newsprint remains the speciality of the Quebec industry, although a gradual decrease in its relative importance has been observed since the 1960s. From 1960 to 1987 newsprint output rose by 53% to 4.5 million tonnes, but its share of Quebec's total pulp and paper output fell from 71% to 52%. Printing and writing paper, specifically mechanical pulp-based specialty paper, and commercial pulp have captured an increasingly large share of overall output: the former from 2% to 16% and the latter from 12% to 16% from 1960 to 1987. Thus, output of specialty paper and commercial pulp stood at 1.0 and 1.3 million tonnes respectively in 1987.

Paperboard (914,000 tonnes), fine paper (311,000 tonnes), tissue and toilet paper (224,000 tonnes), and wrapping and other paper (305,000 tonnes) complete the range of Quebec products.

3. SIZE OF THE QUEBEC PAPER INDUSTRY

The paper industry is central to the Quebec economy. Its 61 mills provided employment for 31,400 workers in 1987, or 6% of jobs in Quebec's manufacturing sector. With shipments worth $5.7 billion, it accounted for 8.5% of the value of total manufacturing shipments from Quebec.

The output by volume of pulp-paper-paperboard was 7.5 million tonnes (1987), placing Quebec eighth in order of the world's major producers with 4% of world output, after the United States (33%), Japan (9%), the rest of Canada (6.5%), the U.S.S.R. (6%), Sweden and China (5%) and Finland (4.4%). In 1970, Quebec's share of world output was slightly higher (4.7%), putting it in sixth place in the world, ahead of China and Finland. The strengthening of production capacity by Brazil and China largely explains this decline in Quebec's relative share of world output over the past 20 years.

With estimated foreign shipments of $3.8 billion in 1987, the pulp and paper industry holds second place among Quebec's exporting industries, contributing 19% of the province's total international exports. Newsprint is Quebec's No. 1 export product.

Since the industry is highly capital-intensive, labour productivity overall is 38% higher than the Quebec manufacturing average. This advantage is reflected in higher wages: in 1984, the average annual wages paid to workers in the paper sector were $31,999, compared with $20,053 in the manufacturing sector in general. The industry has also benefitted from a labour productivity increase above the overall manufacturing sector average, especially since the mid-1970s. The faster growth in capital expenditure observed since 1973, and particularly since 1979, largely explains the better productivity showing.

Over the past few years, capital expenditure has seen a remarkable increase, largely reflecting investment in a new fine paper mill in Windsor. In 1987, capital investment reached $1.1 billion, or 26.2% of all capital expenditure in the Quebec manufacturing sector.

The pulp and paper industry's contribution to Quebec's regional economy varies considerably from one region to another. Although there are mills in every region, the industry is better represented in the Trois Rivières, Quebec City, Saguenay-Lac St. Jean and Outaouais regions, which account for 70% of Quebec's production capacity and 46% of the province's paper sector employment.

Moreover, a number of mills are located in areas far from urban centres, and this has led to the development of those centres. Cases in point are Alma, Baie Comeau, Lebel sur Quévillon and Temiscaming.

4. INTERDEPENDENCE WITH THE SAWMILL SECTOR

It is worthwhile pointing out the gradual interdependence which the pulp and paper industry has developed since the 1970s with the sawmill sector, in order to guarantee forest concessions and supplies of chips at good prices. In 1988, paper companies owned 10 of Quebec's 24 sawmills producing at least 50 million foot board measure (fbm) per year, and control 70% of the total output of these sawmills. In the Saguenay-Lac St. Jean region, no sawmill of any size has remained independent.

Since it is estimated that close to one-half of pulp and paper mills' supplies are met by sawmills, it is easy to anticipate that the strong paper company presence within the sawmill sector will be maintained, even though the paper companies generally do not generate stunning profits with the sawmills they operate.

5. OUTLOOK

For the Quebec paper industry, there is no doubt at all as to the prime importance of the U.S. market: in 1987, 84% of paper exports loaded in Quebec were in fact shipped to the United States. Moreover, over the past five years, it is on the U.S. market that sales of Quebec paper products have seen the strongest growth, increasing yet further the sector's dependence on the American market.

Analytical forecasting of world markets shows, however, that by the year 2000 the highest rates of growth in paper demand will originate in Southeast Asia and Japan. Nevertheless, the United States and Western Europe will remain the largest consumers of paper in terms of volume. The increase in net U.S. demand by the end of the 20th century should thus be amply sufficient to absorb expected additions to the Quebec industry's production capacity.

In the specific case of newsprint, it is estimated that Quebec could increase its production capacity by 0.7 million tonnes by the year 2000; this would encourage it to make greater use of hardwood, high-yield pulp and recycled fibres. At the same time, the United States should require 1.8 million tonnes more than in 1986 to meet its net demand. Consequently, it is unlikely that Quebec producers will be stimulated in their marketing toward Asian outlets. The Quebec industry will thus remain dependent on the fluctuations of the economy and therefore the paper demand of the United States, quite apart from the impact of the exchance rate of the U.S. dollar on their profits.

6. MAJOR CHALLENGES

The Quebec industry also has to adapt to new market conditions which have appeared over the past 15 years on the international scene. Such conditions include the emergence of new competitors with considerable advantages in terms of fibre costs and sometimes labour costs as well. These new suppliers on international markets, notably Brazil, exert pressure on prices and on corporate investment decisions, through the attractive conditions they offer in terms of both lower production costs and more generous tax policies.

Other factors exert pressure on the Quebec industry with respect to its technology and its traditional products, such as the development of thermomechanical and chemical-thermomechanical pulp, or superior quality specialty paper, such as Type A supercalendered paper or slightly pigmented paper. These new products, stemming from more modern technology, force the Quebec industry to rethink its product supply structure in order to be able to meet new market requirements.

Over the next few years, Canada-U.S. free trade will also require a number of adjustments, especially in the wrapping and paperboard sector.

Other conditions depending on the overall economic environment also play a decisive role in the development of the paper industry, among them interest and inflation rates. Interest rates influence investment decisions and thus the competitiveness of this highly capital-intensive industry, while the rate of inflation has a major impact on production costs in an industry subject to demand and price cycles. In short, over the next few years, the Quebec industry will have to meet some major challenges if it is to remain a world leader.

6.1 Forest resources and secondary fibres

The future of Quebec's paper industry is fundamentally linked to the forest. But the state of forest resources, their non-optimum utilization and their harvesting costs hamper the current competitiveness of the Quebec industry and cast a shadow over its future development.

In fact, the harvesting of economically accessible softwood fibre is currently carried out almost to the maximum, and in the medium term a slowdown in fibre supply is expected in certain regions of Quebec. Moreover, harvesting areas are moving farther and farther way from processing plants and are now on less productive land, increasing operating costs accordingly.

The new provincial forestry plan, which has been in force since spring 1987, will certainly rectify the current state of forest management, but it will lead to an increase in the cost of wood which will compound the problem of what fibre considered to be the most costly fibre in North America.

The main objective of the actors in the forestry sector must therefore be to ensure maximum utilization of the available resource and adequate regeneration of the resource. There is a very substantial volume of unexploited hardwoods, and the Quebec paper industry uses relatively few recycled fibres. By way of illustration, secondary fibres account for 50% of total supplies in Japan and 25% in the United States, whereas in Quebec the figure is only about 5%. Moreover, forest biomass offers significant potential which has to date been barely exploited.

6.2 Manpower: training and retraining

The modernization of mills, use of new technology, establishment of new production units and changes in the structure of Quebec supply, particularly following the greater freedom in Canada-U.S. trade, are all factors which will increasingly exert pressure on manpower in the paper industry, either by reducing the number of jobs or by substantially altering the technical skills required.

6.3 Production costs

Fibre and labour costs are especially responsible for high production costs in the Quebec paper industry. In fact, Quebec's relatively low labour productivity compared with our foreign competitors (largely attributable to the age of the province's paper mills and machinery), coupled with relatively high wages paid to Quebec's paper sector work force, conspire to make the labour component of production costs among the highest in North American when expressed in U.S. dollars.

It is estimated that the Quebec industry should invest some $1.5 billion a year over the next 10 years in order to lower its production costs and maintain its competitive edge on world markets.

6.4 Research and development

The fact that the Quebec industry spends relatively little on research and development forces it to remain often dependent on technological developments from foreign competitors. The Quebec paper industry spends an estimated $30 million a year on research and development, or 0.6% of the value of the industry's overall sales. In the United States, the figure is 1% of paper industry sales, while the Swedish industry devotes 2.6% of the value of its annual sales to research and development. So some of Quebec's competitors invest 2-4 times as much in research and development, thus threatening the province's industry with continuing dependence on foreign technology.

6.5 Environment

Between 1979 and 1986, the Quebec Department of the Environment (MENVIQ) estimates that the Quebec paper industry succeeded in reducing its total suspended solids rate by 53% from an average daily discharge of 600 tonnes in 1979 to 280 tonnes in late 1986. During the same period, the situation concerning biological oxygen demand (BOD) improved by 34%, going from a daily discharge of 1,400 tonnes to 920 tonnes. In all, capital expenditure of more than $700 million was made in order to reduce environmental problems. MENVIQ estimates, however, that further capital investment of approximately $320 million is required before the industry complies with current suspended solids and BOD standards. While these are substantial sums, the mills might in some cases reap tangible benefits from the reduction, particularly in terms of the more economical use of raw materials and lower energy consumption.

7. CONCLUSION

The Quebec industry's place on the world scene at the dawn of the 21st century will thus depend on its ability to respond competitively to international changes in two strategic areas for the industry: markets and technology.

Within Quebec, the question of forest resources is high on the list of paper companies' concerns. The combined action of governments, industry and scientists in seeking solutions to the decline of our forests, notably because of acid rain, will also be a decisive factor in maintaining the competitive edge of the Quebec industry.

SOURCES OF STATISTICAL DATA USED IN THIS PUBLICATION

Indicators	**Sources**
International data	"OECD Economic Perspectives" Organization for Economic Co-operation and Development
GDP	Conference Board
Retail sales	Statistics Canada
Exports/Imports	Quebec Statistics Bureau (BSQ) and Statistics Canada
Capital expenditure	Statistics Canada
Households expenditure	Conference Board
Personal income	Conference Board
Personal disposable income	Conference Board
Housing starts	Statistics Canada
Bankruptcies	Office of the Superintendent, Bankruptcy
Person-days lost	Quebec Department of Labour
Corporation profits	Statistics Canada
Employment, unemployment, labour force	Labour Force Survey, Statistics Canada
Trade balance	BSQ and Statistics Canada
Current operating balance	Statistics Canada

SOURCES OF STATISTICAL DATA SED IN THIS PUBLICATION

(cont'd)

Capacity utilization rate	Statistics Canada
Consumer Price Index	Statistics Canada
Industrial selling prices	Statistics Canada
Manufacturing shipments	Statistics Canada
Mining shipments	Quebec Department of Energy and Resources
Farm cash receipts	Statistics Canada
Value of fish landings	Fisheries and Oceans Canada
Construction sites	Quebec Construction Office
Shoes production	Statistics Canada
Cigarettes production	Statistics Canada
Electricity sales	Hydro-Quebec
Population, administrative regions	BSQ